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NEW SOUTH WALES. -

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE

AND

APPENDIX

RELATING TO THE

PROPOSED BRIDGE AT THE SPIT, MIDDLE HARBOUR.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37, section 8.

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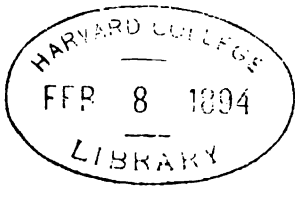

The Government.

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NAMES OF THE MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable JOHN LACKEY, Chairman.
The Honorable GEORGE CAMPBELL.
The Honorable WILLIAM HENRY SUTTOR.
The Honorable JAMES WATSON.
The Honorable FREDERICK THOMAS HUMPHERY.

LEGISLATIVE ASSEMBLY.

JOSEPH PALMER ABBOTT, Esquire, Vice-Chairman.
HENRY COPELAND, Esquire.
JACOB GARRARD, Esquire.
ALEXANDER KETHEL, Esquire.
SYDNEY SMITH, Esquire.
THOMAS MICHAEL SLATTERY, Esquire.
JOHN RENDELL STREET, Esquire.
DANIEL O'CONNOR, Esquire.

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Thomas Buckland, Esq.	8–9
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„ „ sites for proposed low-level and high-level Bridges.

„ „ design for proposed Bridge at the Spit.

„ „ unalienated Crown land, the value of which would be affected by the proposed Bridge at the Spit.

Sketch of proposed Steam-punt for Ferry purposes at the Spit, in lieu of the ordinary punt at present there.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

BRIDGE AT THE SPIT, MIDDLE HARBOUR.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the present Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, to whom was referred the duty of considering and reporting upon "the expediency of erecting a Bridge at The Spit, Middle Harbour," have, after due inquiry, resolved that it is not expedient the work should be carried out; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

The bridge, as proposed, would cross Middle Harbour at The Spit, near the site of the present ferry; and according to the design it would be constructed of two central openings of 60 feet each, with two spans of 125 feet each on either side. The central spans would be formed by continuous lattice girders, revolving upon a central swing pier; the 125 feet spans would be independent lattice girders. The roadway of the bridge would be 32 feet wide; the height of the superstructure, which would rest upon wrought and cast iron cylinders, 30 feet in the clear above high-water; and the approaches, which would be 1,500 feet in length, would consist of timber spans, and an earthwork embankment. The total estimated cost of the work is £62,000.

As far back as 1881 representations were made to the Government in favour of the construction of a bridge across Middle Harbour, and since then the question has been before several Ministers for Works successively, the result, so far, being that a sum of £62,000 for the work was placed on the Loan Estimates for 1888, and passed.

The Committee, after a careful investigation, have arrived at the conclusion that the bridge should not be erected, and that the requirements at The Spit in the form of improved arrangements for crossing that part of Middle Harbour can for the present, and for many years to come, be met by means of a steam-punt.

They have come to this decision for several important reasons:—

(1.) The expensive nature of the bridge compared with the alleged beneficial results which its construction would bring about.

(2.) The present overland traffic to Manly and its neighbourhood, or that which is probable for some years to come, is not likely to be increased to such an extent as to warrant the erection of the proposed bridge, seeing that, even with this bridge, unbroken land communication could not be had betwen Manly and Sydney, unless by travelling round by way of the bridges across Lane Cove, the Parramatta River, and Iron Cove, a distance so great as to make the journey practically impossible.

(3.) Inasmuch as persons passing between Sydney and Manly by way of The Spit must make use of the steam-ferry boats running between Sydney and North Shore, concerning which no witness examined by the Committee made any complaint, there should be no inconvenience experienced in the use of similar means of transit at The Spit, provided sufficient measures be taken for ensuring safety and expedition.

(4.)

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(4.) It is the intention of the Department of Public Works to at once place a steam-punt of the best description at The Spit, in lieu of the ordinary punt at present there, and the plan of this steam-punt shows that it will be sufficiently commodious to afford all the accommodation likely to be required for some time to come, while the width of Middle Harbour at The Spit being much less than the distance from Sydney to North Shore, the crossing in the punt at The Spit should occupy much less time, and could be carried out with as much regularity as the ferry service between North Shore and Sydney.

(5.) It does not appear that the construction of the bridge would do much, or more than a steam-punt, to promote settlement, and the area of Crown land in the neighbourhood of Manly, the value of which would be increased by the improved means of access to it which the proposed bridge would afford, or the probable increased value, is not sufficiently large to justify the expenditure of £62,000, and the subsequent annual charge for interest upon that sum and other expenses connected with the maintenance of the bridge.

(6.) The bridge, being a low-level one, would, to a certain extent, impede the present water traffic in Middle Harbour, and would be a more serious impediment when the shores of that estuary become, as in the course of a few years they may, extensively populated.

The bridge, as already stated, is estimated to cost £62,000; but as it is not quite certain that this would be the exact cost, the expenditure might be greater. Mr. W. C. Bennett, Commissioner and Engineer-in-Chief for Roads, says upon this point that the sum named will cover the total cost of the bridge and approaches as far as he can estimate; he has been guided by the prices paid for other works, and has reason to think that the estimate ought to be a fair one. But as no provision is made in the design of the bridge for footways, apart from the ordinary roadway, the cost would probably have to be increased to ensure the complete safety of pedestrians, especially if the bridge were to carry a tramway, though at present the possibility of a tramway crossing the bridge is not a matter for serious consideration. If these footways were provided, the estimate of £62,000, according to Mr. Bennett's evidence, would be increased by at least £3,000. By an appendix to the evidence of Mr. J. A. M'Donald, Assistant Engineer to Mr. Bennett, it also appears that if certain alterations were made in the design of the bridge the total cost would exceed to a very considerable extent the sum mentioned in the reference of the work to the Committee. But supposing the cost of construction to be £62,000, the annual charge against the bridge, representing interest and depreciation, working expenses, painting, &c., would be £3,604. All bridges in this Colony are free to the public, and therefore there could be no receipts from this bridge, unless at some future date a private company secured the right to use it for the purposes of a tramway, in which case the payment by the company would be credited against the annual charge arising from the expenditure upon the construction of the bridge. Against this large expenditure and this annual charge there must, of course, be placed the advantages which it is contended will arise from the construction of the bridge. First, there is the beneficial change from the present slow and unsafe method of crossing at The Spit by means of an ordinary punt,—an advantage, however, which can be secured without incurring the expense necessary for the erection of a bridge. Then there is the pleasure which would be afforded people by a drive from North Shore to Manly, or from Manly to North Shore; but as Sydney residents would not be likely to find much interest in such a drive while the necessity exists to use the ferry between Sydney and North Shore, the persons using the bridge in this way would be principally residents of North Shore, or Manly, and their number would be few. Further, there is the convenience which would be afforded those persons who are fearful of crossing the Heads in the Manly Beach steamers during tempestuous weather; but in their case also the number would be few, and they could cross at The Spit in a well-appointed punt with as much safety and comfort as over a bridge. Another reason advanced in favour of the bridge is an expectation in the minds of some of the residents of Manly that North Head, or a large portion of it, will eventually be dedicated by the Government as a public park, and

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and it is considered that a bridge will afford suitable access to that locality. Inasmuch, however, as there is nothing to show that such a dedication is to be made, there is no ground for regarding this as a sound reason why the bridge should be erected. Lastly, there is the idea that the bridge would largely add to the value of Crown land around Manly, and by promoting settlement bring about much more profitable sales of land and a considerable addition to the population. But the evidence shows that the quantity of Crown land, the value of which would be affected by the bridge, is small, and therefore that the increased price likely to be obtained for it would, in comparison with the cost of the bridge, be of small consequence; and there is little or nothing in the statements of the witnesses examined by the Committee to induce the belief that the population of Manly and its neighbourhood would, after the erection of the bridge, increase more rapidly than now, or more than it would if some other and less costly improved means of crossing Middle Harbour at The Spit were provided in the place of the existing punt.

In relation to the second of the reasons which have influenced the Committee in their decision, it seems evident that if an extensive overland traffic between Sydney and Manly is to be brought about it must be by making the connection between the two places by land complete, and of such a nature that the journey from one place to the other shall be at least as convenient, if not more so, than the means which at present exist for communication by water. But the erection of this bridge, beyond the improved facilities it will afford for crossing at The Spit, will do nothing in the way of attaining this object. The overland journey must end at St. Leonards, and resort must be had there to the North Shore ferry boats, or it must be extended to the distance of about 20 miles, access to Sydney from the northern side of the harbour being had by crossing over the Parramatta River and other bridges. It is very improbable that with the existence of such obstacles the overland journey would be made by many persons, and it appears less likely when the facilities and attractions associated with the journey by water between Sydney and Manly are taken into consideration. The distance between the two places by water is seven miles; the journey is accomplished by the steamers of the Port Jackson Steamship Company, which run with perfect safety and uninterrupted regularity in any weather, in 35 or 40 minutes; and the maximum cost per trip by season ticket is 4d. Added to this should be the fact that the vast majority of those who travel between Sydney and Manly, either as residents of Manly or as visitors to that suburb, do so because of the benefit to health believed to be derived during the passage down and up the harbour. Even with tram communication between Manly and North Shore, it is very doubtful whether the journey from Manly to Sydney could be made as quickly and cheaply as is the case with the present water trip. To business men, therefore, and other persons to whom time is a consideration, and to the large proportion of the travelling public, who invariably give their patronage to what is safe, comfortable, expeditious, and cheap, the water journey to Manly would undoubtedly be preferred to a journey by land, the chief recommendation in connection with which would be that Middle Harbour could be crossed by means of a bridge.

Referring to the third of the reasons mentioned, it will be found from the evidence that the conveniences for crossing Middle Harbour by means of a steam-punt will be quite equal to what is experienced in relation to the steam-ferry boats running between Sydney and North Shore. No one among the witnesses examined considers that a steam-punt is equal to a bridge; but it is admitted that it may be made as convenient as what is met with in the traffic between Sydney and North Shore. That the steam-punt which it is proposed to place at The Spit will be safe and commodious, and will, moreover, perform its work expeditiously, will be shown further on; meantime it may be mentioned that the engineers responsible for both the plans of the proposed bridge and those of the steam-punt admit that the punt will get rid of the present difficulty experienced in crossing at The Spit. Mr. W. C. Bennett says *(Question* 55*)* that "there need be no very great difficulty if there were a steam-ferry there, except the inclines on either side." Mr. J. A. M'Donald, the engineer who prepared the designs for the bridge and the punt, states (*Question* 651) that the punt would certainly meet the requirements of the traffic for a time. Mr. Bennett does not think that the punt would, satisfactorily to the public, do all that would

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would be necessary for the next ten years; but Mr. M'Donald is of opinion (*Question* 651) that when the traffic has increased beyond what the punt will carry, the simplest plan would be to provide a duplicate punt, to run at intermediate intervals. Mr. Bennett alludes, as already mentioned, to the steep inclines on either side of The Spit; but this severe grade is shown by Mr. M'Donald's evidence to have been left with a view to putting the bridge in, and, if a steam-punt were decided upon, the grade could be eased down.

The intention of the Department of Public Works to place a steam-punt at The Spit, in lieu of the present ordinary punt, is influenced by the knowledge that, if the erection of the proposed bridge were sanctioned, it would be at least two years before the bridge would be completed, and some improved means of crossing Middle Harbour at The Spit is required at once. Therefore, plans for a punt have been prepared, and tenders for its construction invited. The punt is estimated to cost about £2,000, but it would probably be built for much less, as a tender for its construction, amounting to £1,487, has been received; and it is to be worked by steam and a wire rope, at an estimated annual cost, including depreciation, of £800, a large portion of which would be recouped by the annual receipts. Its carrying capacity will be eight ordinary-sized buggies each trip, with room for passengers on the side-walks; and it will cross and recross at intervals of 15 minutes, though the distance being short, it could do the journey much quicker. The punt, as proposed, is one of the latest design; and, according to the evidence of Mr. M'Donald, it would not be difficult to provide by means of it for the conveyance of the traffic connected with a tramway from one side of The Spit to the other. From this it will be seen that the punt is certain to meet the requirements of the ordinary traffic for some time to come. Eight ordinary-sized buggies every quarter of an hour would represent between, say, 6 o'clock in the morning and midnight, a traffic of 576 vehicles; and in the opinion of the Committee it is very improbable that there would be anything like such a traffic at this crossing, even if not only the Spit Bridge but also a bridge to connect Sydney with North Shore were built.

With regard to the question of the bridge promoting settlement and increasing the value of Crown land, it has already been shown that until land communication with Manly is complete, and there is no necessity to use the ferry boats between Sydney and North Shore, the traffic across the bridge must be very small; and therefore the bridge is not likely to promote in any appreciable degree, or more than a steam-punt would do, the settlement of population. Mr. J. W. Deering, Metropolitan and Coast District Surveyor, of the Department of Lands, who was examined by the Committee, and is well acquainted with the district about Manly and Middle Harbour, thinks the bridge would promote traffic to some extent from Manly Beach, but is of opinion that it would not be remunerative. He would regard the bridge as a highway along the coast, but admits that there is certainly no necessity for it at the present time, and that as far as concerns the question of traffic, a steam-punt would answer all purposes for many a day to come. As to the increased value of Crown land, which the erection of the bridge might be expected to bring about, Mr. Deering states that at Harbord, at Manly, near the water reserve, at Dobroyd, at Narrabeen, and at Manly Cove, there are about 4,118 acres which would be directly affected by the bridge. The approximate value of this area is about £73,980, and if the bridge were erected the increased value of the land might be estimated at 25 per cent., which would be represented by £18,500. But the fact that there is not likely to be much traffic over the bridge is evidence that its construction would not influence in any great degree the minds of persons purchasing this land to settle upon it, and though speculators may see in the bridge a step towards complete land communication with Sydney, it is improbable that they would regard it of the importance which would be indicated by an immediate increase of 25 per cent. in the value of land in the vicinity. But, taking Mr. Deering's figures, the increased value of the land which would be affected by the bridge is £18,500, and this at 4 per cent. would produce £740 a year, a very small reduction of the annual charge upon the public which would follow the erection of the bridge.

The last of the principal reasons which have led the Committee to conclude that the bridge should not be erected is that it would to a certain extent impede the water traffic in Middle Harbour. To this objection, however, the Committee do not attach very much weight. A high-level bridge would be so expensive that the

erection

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erection of such a structure could not be sanctioned except under the most pressing conditions as regards traffic; and a low-level bridge, however designed, must in some degree interfere with the passing to and fro of yachts and steamers. But the fact that the bridge, as proposed, would prove an interference with the water traffic deserves some consideration when placed in connection with the other objections against the structure, and to that extent the Committee regard it as one of the reasons why it is not expedient the bridge should be built.

The Committee might have examined other witnesses, for a large number of persons, principally objectors to the bridge, intimated their readiness to give evidence, but they were so satisfied from the results of the inquiry as far as they proceeded with it, of the inexpediency of carrying out the proposed work, and of the sufficiency of a steam-punt to meet requirements, that they closed the evidence, and on Thursday, 13th December, agreed to the following resolution:—

Moved by Mr. Kethel, and seconded by Mr. Campbell:—

"That the Committee do not consider it expedient to recommend the construction of the proposed bridge across Middle Harbour, at The Spit, as they are of opinion that the steam-punt proposed to be built by the Department of Public Works for a ferry Service at The Spit will be sufficient for all the traffic at that place for many years to come."

JOHN LACKEY,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
11th January, 1889.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

BRIDGE AT THE SPIT, MIDDLE HARBOUR.

FRIDAY, 16 *NOVEMBER*, 1888.

Present:—

JOSEPH PALMER ABBOTT, Esq. (VICE-CHAIRMAN)..

The Hon. GEORGE CAMPBELL.	HENRY COPELAND, Esq.
The Hon. WILLIAM HENRY SUTTOR.	JACOB GARRARD, Esq.
The Hon. JAMES WATSON.	SYDNEY SMITH, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN RENDELL STREET, Esq.

DANIEL O'CONNOR, Esq.

The Committee proceeded to consider the proposed bridge at The Spit, Middle Harbour.

Joseph Barling, Esq., Under Secretary for Public Works, sworn and examined.

1. *Vice-Chairman.*] Do you know anything in reference to this matter? Yes. I will give just a short statement in reference to it. For many years the question of the necessity for the construction of a bridge over the Spit has been before the Government of New South Wales. I find that as early as 1881 representations were made to the Government of the day for the construction of a bridge over Middle Harbour, and I observe, on looking through the papers, that when the Honorable the Chairman of this Committee was Secretary for Public Works he gave instructions that the matter should be considered when the Estimates for that year were being dealt with. The question has been successively before Mr. Secretary Copeland, Mr. Secretary Wright, the late Sir A. Stuart, Mr. Secretary Lyne, and the present Government, the result of which has been that a sum of £62,000 for the work was placed on the Loan Estimates for 1888, and passed. I notice also amongst the papers that in 1883, Mr. Secretary Copeland directed that certain surveys should be made with the view of a railway or tramway being ultimately carried along the road, and subsequently Mr. Secretary Lyne, when the unemployed were about to carry out improvements to the road, gave instructions that the road should be constructed to tramway grade, which has been done. I may mention that a suggestion has been made by Mr. T. E. Willis for the erection of a high-level bridge near Clontarf, as shown on the plan I submit herewith. This proposal has been fully investigated by the Department, and evidence will be given on the point if required by the Committee. The main objections to it are that the bridge would have to be built on a reef, which would prevent the deepening of the channel at any future time, if the bridge were erected. The estimated cost of the work is £264,000.* Another objection is that there is at present no road to the site, and a large expense would have to be incurred to provide approaches. The engineer will produce a plan illustrating the matter. To show the growth of the traffic which has taken place on the road between Sydney and Manly, I subjoin the following statistics in reference to the punt traffic:—Previous to 1886 a collector was in charge, being paid at the rate of £1 per week, and retaining the tolls received. In 1886 the ferry was leased for £65 per annum. In 1887 the rent received was £165. In 1888 it was let at a rent of £276. From inquiry I have made at the Government Statistician's office I find that the estimated population of St. Leonards, East St. Leonards, Victoria, North Willoughby, and Manly is 20,070. With regard to the proposed bridge, I observe in looking over the evidence taken before the Select Committee on the North Shore, Manly, and Pittwater Railway and Tramway Bill, that many witnesses gave evidence that the height of a bridge at the Spit should be 100 feet. A rough estimate has been prepared of the cost of a high-level bridge at this place, which may be put down at something like £200,000† over the estimated cost of the bridge as proposed. It will be observed that two swing openings are proposed, and the cost of working the machinery may be put down at something like £300 per annum, but the interest alone on the additional amount required for the high-level bridge would, at 4 per cent., be £8,000 per annum, thus showing how very much more economical it will be to carry out the work as proposed, even allowing for the constant attendance of two men to attend to the swing. The following is a description of the intended structure:—This bridge, which is to form the connecting link between North Shore and Manly, will cross Middle Harbour at the Spit, near the site of the present ferry. As proposed, it will be constructed of two central openings of 60 feet, with two spans of 125 feet upon either side. The central spans will be formed by continuous lattice girders, revolving upon a central swing pier. The 125 feet spans are to be independent lattice girders. The roadway will be 32 feet wide. To allow of general harbour traffic the superstructure will be 30 feet in the clear above high water, and will rest upon wrought and cast-iron cylinders. The approaches to the main bridge, which are 1,500 feet in length, will consist of timber spans, and an earthwork embankment. £62,000 has been voted for the work.

J. Barling, Esq. 16 Nov., 1888.

* NOTE (*on revision*):—With a headway of 124 feet. † NOTE (*on revision*):—With a headway of 150 feet.

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William Christopher Bennett, Esq., M.I.C.E., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn and examined :—

W.C.Bennett, Esq. M.I.C.E. 16 Nov., 1888.

2. *Vice-Chairman.*] You know Middle Harbour, and have known it for many years? Yes.
3. Do you produce a design showing the proposed bridge at the Spit? Yes.
4. Will you tell us all you desire to state about this bridge? The best and cheapest place has been selected. Some two years ago the approaches to the punt were graded. The unemployed were engaged on it, and they made suitable approaches with tramway grades, at present available for the ferry, but arranged so as to be ultimately of use for the bridge.
5. So that the construction of the approaches on each side of the bridge is to a great extent already finished? The road to it is. Then we proposed to either embank the Spit along the sand or make timber open approaches. The latter course is the one that has been decided on within the last few days. We have only had borings made within the last few days to enable us to determine whether it would be safe to put a bank of such a height on the sand.
6. Will that add to the proposed cost? No; it will be the same.
7. Do you think this opening will be sufficient for the present and future traffic of Middle Harbour? I am quite sure it will. The opening in the Parramatta bridge is somewhere in the same proportion. It answers for all the traffic there.
8. Is it on the same principle as this? There will be some slight differences. We have adopted more recent improvements. Those girders are all to be steel.
9. What time would it take to open this bridge for a vessel to pass through? We will improve on the Parramatta River bridge. That is worked by hand. This will be worked either by steam or hydraulic power; we have not determined on that yet. If the water-pipes come sufficiently near, I think we would work by pressure from them; if not, we would have a steam-engine, accumulate sufficient water at a high pressure, and have a small hydraulic engine that would turn that in a couple of minutes.
10. The traffic that way has been increasing a great deal the last few years? Very rapidly indeed. I made the first road down there some twenty-five years ago—it cost about £300 the whole thing—across the Spit. The traffic has outgrown that, and since those inclines were made the traffic has grown very rapidly indeed.
11. And the present punt appliance? Is totally inadequate; so inadequate, that the Government on my recommendation are going to put a steam-punt there at once, pending the construction of the bridge, with the view that the punt can be removed when the bridge is built and utilised elsewhere.
12. You think then that this bridge will not interfere with the traffic of Middle Harbour to any inconvenient extent? I think not. There is a sentimental objection that yachts will not be able to go under it, but the ordinary openings of the bridge are to be 10 feet higher than the Parramatta bridge, and with the exception of half a dozen yachts, every boat in the harbour will be able to go under. Those half dozen are not fond of going up Middle Harbour; they go out to sea, where they have more scope, for a sail. It would be very unwise to put a bridge at a great height simply to accommodate a few yachts. If there is ever sufficient trade in larger sea-going vessels, they can pass through the swing.
13. Has not the population on the northern side of Middle Harbour been increasing very rapidly of late years? Very rapidly indeed.
14. As well as on the southern? Yes; on both sides.
15. *Mr. Humphery.*] You are of opinion that £62,000 will cover the total cost of the bridge and approaches? Yes; as far as I can estimate. We have been guided by the prices we have paid for other work, and I have reason to think that the estimate ought to be a fair one.
16. Will this bridge carry a railway or tramway? It will carry a tramway.
17. It will be constructed so that it will carry a tramway? Yes.
18. *Mr. Street.*] 32 feet I think you said was the breadth;—will that provide for the tramway and the vehicle roadway as well? Yes; it will provide plenty of room. If necessary we can put cantilevers for a footway.
19. *Mr. Garrard.*] How much would the cost be increased by an additional 10 feet in width? You might say it would be increased one-third. It would not exceed that.
20. Would it necessitate stiffer cylinders? Yes; it would necessitate larger cylinders in order to have a greater bearing area on the base, because the load would be increased. There would be heavier girders, and very much heavier cross girders; and then to increase the width of the swing would be a very large addition to the cost. In fact, if the width of the ordinary bridge were increased, I should be disposed to keep the swing at the present width.
21. What would be the estimated cost of providing these footways outside? I do not think they would cost more than £3,000.
22. You have not included that in this estimate of cost? No.
23. It would be very dangerous to pedestrians to be walking in the roadway on a long bridge like this with a large amount of traffic? Yes; I am fully alive to that.
24. Is it not desirable at once if this bridge is to be constructed to provide these footways for the safety of pedestrians? If they are going to have a tramway I think it would be desirable.
25. What depth are you supposed to sink to get a bearing for your cylinders on rock or hard soil? We have calculated on something between 30 and 40 feet.
26. Have you had borings there? We have not had borings until lately; we have borings now.
27. Have any other sites been proposed? Yes; there were several sites surveyed. There was a site brought under our notice by Mr. Willis; we made a survey for that, but it would be a gigantic affair.
28. Does that run across to Clontarf? Yes; a high-level, nearly as large as the proposed North Shore bridge.
29. A different route altogether from this? Yes.
30. I think you said it was intended to make this approach by timber work instead of embankment? Yes.
31. Does this join the new road that comes down there? Yes.
32. The new and the old roads run to much about the same place on the Spit, I suppose? Yes; but the old road is obsolete.
33. What incline have you put on the Manly side from this low-level bridge? I think it is not worse than 1 in 16 or 17.*
34. For any great distance? That is the ruling gradient a good deal of the way. 36.

* Note (*on revision*) :—It is 1 in 20 and 25, except at foot.

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35. It would be considerably easier than the present one? Yes.
36. Are these all cast iron cylinders, or are some of them wrought iron? Our usual plan is to have cast iron cylinders below high-water mark and wrought iron from that up.
37. What other bridges are built that way? Parramatta River, Iron Cove, Manilla, in fact all the bridges built by the Department.
38. Is there much corrosion on the part of the wrought iron cylinders? No; I do not find it.
39. I suppose these cylinders are filled up in the usual way with concrete? Yes.
40. What width would be required for a single line of tramway? About 9 feet.
41. And for a double line? 18 feet.
42. That would only leave 12 feet? Yes; but then the tramway part of it would be available the same as the street for traffic.
43. But in the event of two trams going in opposite directions at the same time there would be no room for vehicles? The traffic should be regulated. There would be nearly as much room as there is in many of the streets.
44. How long do you estimate this bridge to last? It is almost impossible to say. It will certainly last 150 years.
45. Do you not think then that in view of the possible enormous growth of traffic there it would be wise to have it wider? It is hardly necessary to look forward so far.
46. The opening between the cylinders is 60 feet clear? Yes; it is a little wider than the Parramatta bridge.
47. And the headway? The headway is 10 feet more, that is in the fixed girders.
48. I suppose the estimate of cost is not likely to be exceeded—it is based on your experience of bridge building in other parts of the colony? Yes.
49. *Mr. Copeland.*] Is there not some proposal at the present time for building a tramway along this road? Yes.
50. Is that a private concern? A private company are trying to get a bill through the House; I reported strongly against it.
51. On what grounds did you report against it? I reported against it, then, because it was a narrow gauge; that was one reason. Another reason is that I am doubtful of the prudence of giving a private company rights on public roads.
52. I suppose if this bridge were built, this tramway company would expect to use it? They expect to pay for it too, I think; they expect to pay something reasonable.
53. Would they be likely to construct a bridge themselves;—would they be strong enough to do that? They talked of doing it.
54. I suppose they would not be likely to build it if they could get the Government to build it for them? Very likely the bridge they would build would be only suitable for themselves; the Government bridge would be useful for general purposes.
55. What real necessity is there for this bridge;—is there any difficulty in crossing at the present time? At present there is, but there need be no very great difficulty if there were a steam ferry there, except the inclines on either side; and the traffic is getting very great.
56. I suppose the whole of the vehicles between Sydney and Manly Beach would have to go by that route? Yes, any vehicle traffic there is must go that way.
57. I suppose this road would also be required for military purposes? Yes, it was on that ground I objected to the tramway being so narrow. If any urgent occasion came to concentrate a lot of rolling stock and get material and men down to the Heads rapidly or get them away, there would be no rolling stock but the limited rolling stock of this company; but if it is made the ordinary gauge the whole of the rolling stock of the colony could be brought there if necessary.
58. I suppose this bridge as proposed will be strengthened to carry heavy field-guns? It would carry any field-guns, decidedly. I do not think it would carry those heavy 100-ton guns or 50-ton guns.
59. You think this is the best site for the bridge attainable? Yes; I think it is, at a moderate cost.
60. Do you think there is really any better site—more useful site? I do not. There is a site which would require a very large outlay, and, as another objection, it is right on the top of a rocky shoal, which may have to be blasted out and excavated at some future time to admit vessels of a large draught coming up, and the bridge being there would make the blasting rather awkward and expensive.
61. Suppose you were to get a steam-punt, would it be capable of affording accommodation for the traffic? The steam-punt we propose now is only calculated to accommodate horse traffic; it would have to be a very much larger affair to accommodate a tram, and the grades are very steep. It would be rather an awkward affair altogether.
62. Would it be large enough to carry horses and vehicles? Yes; the one we propose would carry horses and vehicles. It would be the same as the one at George's River.
63. What would be the cost of that punt? £2,000.*
64. And the annual charge? £500 a-year.
65. Then there is the interest on the £2,000? Yes, and the depreciation.
66. What is the depreciation? The depreciation would be 10 per cent., and the interest 4.
67. *Mr. Garrard.*] Do you find 10 per cent. sufficient to allow for the depreciation of a steam-punt? If you have a sum provided for repairs also. Ten per cent. is the capital depreciation. I conclude you would have to put a new punt there every ten years.
68. Does £500 for maintenance include working and repairs? Yes. We have a steam-punt at Grafton that has been twenty years at work.
69. *Vice-Chairman.*] What would be the annual income from this steam-punt? It would be very difficult to say. The traffic would not be so great on the punt as it would over the bridge, if it were there, because many people would drive their vehicles who would not go over in the punt.
70. But the steam-punt would induce traffic? Yes; I should think the income would be £400 a-year.
71. What income do you reckon there would be from the bridge? That would depend altogether upon the tolls.
72. *Mr. Copeland.*] The interest in running this steam-punt would amount to £800 a-year, against which you have a probable reimbursement of £400, leaving an annual charge of £400 a-year. On the other hand, you propose to expend £62,000 on this bridge, which, at 4 per cent., would amount to £2,480? Yes; but then the bridge would be for all time, and afford greater accommodation.
73. The £2,480 interest would also be for all time? Yes, unless they put a toll on the bridge. 74.

* NOTE (*on revision*):—Since let for £1,450.

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W.C.Bennett, Esq., M.I.C.E. 16, Nov. 1888.

74. In one case a steam-punt would necessitate an annual toll of £400; in the other case the bridge would amount to £2,480 a-year? Yes. You have not calculated the maintenance of the bridge, the painting, and so on; but still I think the additional cost of the bridge would be justified by the additional accommodation afforded to the public.
75. Do you think the steam-punt would not do for all the traffic at the present time, and, say, for the life of a steam punt—for ten years? I do not think so.
76. How many vehicles would this punt you propose carry over at one time? It would carry just as many as one of those North Shore steamers.
77. How long would it take to cross the water from shore to shore? Three minutes each way. Of course there would be the unloading at the wharf, and so on. Every ten minutes you could go.
78. On each trip would you carry as many as can be carried by this North Shore punt? Yes, nearly as many.
79. How often do the punts leave for the North Shore? Every quarter of an hour.
80. If you had one leaving every quarter of an hour at the Spit do you think there would be more traffic than there is across to North Shore? Not to begin with.
81. For the next ten years is there likely to be more traffic across the Spit, or across to the North Shore. You are not looking to have anything but a punt to the North Shore for the next ten years—it would take ten years to build the North Shore bridge, I suppose. What I want to get at is this: Whether, speaking as an officer of the Department, not having any predilections at all, you think a steam-punt, at an outlay of £400 a year, could not be made to do service for the next ten years? I do not think it would do it in a way satisfactory to the public. I think it would restrict the growth of settlement on the other side.
82. Before they had the bridge across from New York to Brooklyn, do you think the want of a bridge prevented Brooklyn from growing? I know it did not.
83. It has not prevented North Shore, St. Leonards, and those places from growing? No, it has not; but if they had had a bridge they would have grown much faster.
84. Do you not think they have grown fast enough;—do you think there are any other places in the Colony that require the expenditure more urgently than this, if provided with a steam punt, the same as they have to North Shore? In the way of bridges I do not.
85. What about the bridge across the Darling? I know there will be a good deal more traffic here than on any bridge across the Darling.
86. Do you estimate that a steam punt giving as much accommodation as the North Shore one could be worked at an annual outlay of £400? Yes; taking the probable income. Of course these are only rough estimates.
87. *Mr. Sydney Smith.*] And the cost of swinging the bridge—what would you estimate that to be? That would be £250.
88. And what about wear and tear to the swing? Of course, there would be the cost of that.
89. What percentage of depreciation would you allow on the first cost of the bridge? It is very hard to say that, except on the swing.
90. Would there be 5 per cent. depreciation? That would only give twenty years for the bridge. I said the bridge was likely to last 150 years, and that would be less than 1 per cent.
91. *Mr. Copeland.*] What would you reckon the cost of repair, roughly speaking? Painting would cost about £200 a year.
92. Grease and oil, and so on? That would be very little—£10 a year would do all that was necessary
93. Would there be any other kind of repairs necessary? I do not think there would, unless there was an accident.
94. Then the total outlay for this bridge would amount to £2,930 a year—I suppose we might safely add the other £70 and make £3,000 a year—as against £400 per annum, less the receipts, for the punt? Yes; but then you estimate the receipts of the punt, and you do not estimate the receipts from the bridge. Even if there were no toll on the bridge for vehicles, the tramway company would have to pay something. They should be bound to pay rather more than the difference between the two.
95. Do you think it is safe to estimate on an income from a company that is not in existence? No; but if a company is not formed, and a toll is put on the bridge, the vehicle traffic will be so great as to pay very well.
96. Are there any tolls on any other bridges? No; but that is a matter for legislation.
97. *Mr. Humphery.*] Have you formed any opinion of what would be a fair charge to make the tramway company for the use of this bridge? No, I have not. That could easily be arrived at by a calculation like that Mr. Copeland has been making, but more detailed.
98. Are you of opinion that the tramway company should pay 4 per cent. of the cost of the bridge? Yes, I think they should.
99. *Vice-Chairman.*] The tramway company could not work without a bridge? The tramway company should pay the difference between £2,450 and the revenue derived from passengers; because if the tramway company were charged for the bridge, there should be a toll collected on the passengers, or an allowance made to the company for the possible toll.
100. *Mr. Humphery.*] That is the difference between the 4 per cent. on the cost of the bridge and the present returns from the punt? No; and the possible returns from the passengers on the bridge.
101. Allowing a fair increase every year? Yes; there are a great many elements in the calculation, but it would be easily arrived at. Those are the principal features.
102. Could you estimate what would be a fair charge to make the tramway company for the use of that bridge? Well, I could estimate it, but I would rather not do it now. I will send it down to the Committee.
103. *Mr. Suttor.*] Do you know how far this tramway company will run their lines on public roads in that district? They are to go from the present tramway terminus, and follow the military road, I think, and the Spit road that we have made, and on to near Manly. Then, I think they deviate a little beyond Manly from the ordinary road, and make what they call a railway of it.
104. You say they ought to pay something for running over the bridge;—ought they not to pay something for running over the main roads as well? I should think so. There will have to be an arrangement to keep the road in repair.
105. *Vice-Chairman.*] Would it be possible for the tramway to carry their service across the Spit by means of a steam punt? It would be possible, but it would be awkward, dangerous, and uncertain. The inclines close to the water were advisedly left steep. They were carried down to the probable level of the bridge

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bridge at an easy grade, and from that it was necessary to carry them down steep to the water's side; so that there would be a steep grade to encounter after getting out of the punt. W.C.Bennett. Esq., M.I.C.E.

106. *Mr. Garrard.*] What would be the life of the timber approaches to the bridge? Thirty or forty years.

107. What proportion would that bear to the whole cost? About £12,000. 16 Nov., 1888.

John Alexander M'Donald, Esq., M.I.C.E., M.I.M.E., Assistant Engineer, Department of Roads and Bridges, sworn and examined:—

108. *Vice-Chairman.*] Did you prepare a design for this bridge over the Spit at Middle Harbour? Yes; under Mr. Bennett's supervision. J. A. M'Donald, Esq., M.I.C.E., M.I.M.E.

109. What have you to tell the Committee about it? I do not think there are any points I can bring forward that Mr. Bennett has not, except in reference to any details.

110. *Mr. Garrard.*] What would be the increased cost of making this bridge 10 feet wider? I could bring you that calculation at the next sitting. [*Vide Appendix* A.] 16 Nov., 1888.

111. What is the planking? On the whole of the iron bridge it is proposed to put a buckle plate deck, with a tarred metal roadway.

112. Do you find that answer better than the planking? Yes. It is in a constant state of repair, whereas when the timber decking is worn out it means an interruption of several weeks at least to repair it.

113. I suppose in the event of putting footways there they would be planked? Yes.

114. *Mr. Suttor.*] Have you been asked to make any calculation of the cost of this bridge with a headway, say, 100 feet? There have been two sites proposed for a high-level bridge.

115. What would be the cost of the Spit project? About £220,000 with 100 feet headway.

116. That is the total cost? Yes.

117. What was the cost of the other site? That is on the high-level site suggested by Mr. Willis, and the Commissioner had a survey taken of it. The estimate for that would be £260,000, exclusive of the new roadway, which would be very heavy work, with very bad grades, as steep as 1 in 15.

118. That is nearer the mouth of Middle Harbour? Yes. Another great objection to this the Commissioner has already referred to; it would be built on a reef, which has only about 9 feet of water on it at low tide, and if we built a bridge on that it would practically forbid removing the reef at any future time.

119. *Mr. Garrard.*] Is that what is called the Clontarf site? Yes.

120. *Mr. Suttor.*] Have you heard it proposed that the bridge should be 150 feet high;—have you made a calculation of that? Yes; but only a rough calculation.

121. *Vice-Chairman.*] I suppose the easiest way would be to tell us how much a foot it would take to raise it? No; the spans would be altered as you raised it. The estimated cost is £264,000.

122. *Mr. Suttor.*] I suppose it is not proposed to make a lower bridge than the one on this plan? No.

FRIDAY, 30 *NOVEMBER*, 1888.

Present:—

The Honorable JOHN LACKEY (CHAIRMAN.)

The Hon. GEORGE CAMPBELL,	HENRY COPELAND, Esq.,
The Hon. WILLIAM HENRY SUTTOR,	JACOB GARRARD, Esq.,
The Hon. JAMES WATSON,	ALEXANDER KETHEL, Esq.,
The Hon. FREDERICK THOMAS HUMPHERY,	SYDNEY SMITH, Esq.,
JOSEPH PALMER ABBOTT, Esq.,	THOMAS MICHAEL SLATTERY, Esq.

JOHN RENDELL STREET, Esq.

The Committee further considered the proposed bridge at The Spit, Middle Harbour.

Thomas Littlejohn, Esq., merchant, and resident of Manly, sworn and examined:—

123. *Chairman.*] You are a merchant in the city of Sydney? Yes. T. Littlejohn, Esq.

124. And I believe Vice-President of the Chamber of Commerce? Not now.

125. Where do you reside? At Manly.

126. Are you a property holder? Yes; I have a small property. 30 Nov., 1888.

127. Is your property in the neighbourhood of the proposed bridge at Middle Harbour? No.

128. You know the site of the bridge across the Spit? Yes.

129. Have you seen any design of the structure showing the height, width, and length of the bridge? I saw a sketch in Mr. Barling's office about ten days ago.

130. How long have you been a resident at Manly? For about four years permanently.

131. But you are an old colonist independently of that? Yes.

132. And you have watched the progress of Manly? Yes.

133. Has the population increased largely within your knowledge? Yes; it has more than doubled.

134. It is increasing in a greater ratio than it has ever done before? Yes. But I ought to explain that just lately there has been a lull in the accession to the population. I suppose, however, that we shall soon see them coming in again as numerously as before.

135. The greater number you have there the greater, of course, the proportionate increase? Yes.

136. Has it occurred to you during your residence at Manly that the residents have suffered inconvenience through the want of land communication with Sydney? Yes, to a considerable extent; and extra expense, besides inconvenience.

137. The crossing at the Spit is the only route by which what may be called semi-land carriage has been carried on? Yes.

138. This has caused great inconvenience, I take it? Yes.

139. Have the residents of Manly complained of it for some time? Yes; it has been a standing complaint. I ought to say, however, that some of the inhabitants do not want the improved access. For instance some of my own family say that our privacy will be invaded, and that our beautiful quiet will be destroyed.

140. I dare say there are other elements of objection to the construction of the bridge—vested interests—the steam-boat proprietors, for instance? Yes. 141.

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T. Littlejohn, Esq. 30 Nov., 1888.

141. Of your own knowledge have you been aware of any inconvenience caused from the want of improved land communication? Personally I have not been aware of any; but I know from report a good many instances in which great danger has been run, and where there has been great loss of property and nearly loss of life through the inconvenience of the crossing as it at present exists.
142. Do you think that if a bridge were constructed over the Spit it would be a favourite drive for people from Sydney? Yes.
143. It is a very pretty drive along the heights of the Military Road, and across from there to Manly? Yes. I should like in this connection to state a little of what I have seen in other places. I live on the side of Manly next to the North Head. The Roman Catholic grounds are a little off my fence, and beyond them seaward is that magnificent block of land consisting of the North Head. In travelling in Europe, Asia, and America, I have seen public parks in various places, but I have seen no place which is so exquisitely situated for laying out as a public park as is the North Head. I think that it ought to be viewed in that light by the authorities, and preserved for the purpose of making what I should call a Royal Park. The time is not far distant, perhaps, when the North Shore will become a very populous locality. In a few years there will be perhaps several hundred thousand inhabitants. Then I think that if this bridge is built visitors will come down that way from Sydney. Probably a number of visitors would be attracted by this park. I have in my mind's eye an aristocratic and leisured population in Sydney, who would be constant visitors, just the same as in the West End the inhabitants of London go to Hyde Park, Richmond Park, and other such places of resort. I think it would be a great pity to allow that splendid site to be sacrificed for any other purpose. It is capable of being laid out in the most beautiful winding roads and walks, and there are a great many beautiful hollows where tropical flowers and plants could be placed. I am advocating the erection of the bridge over the Spit in order that the formation of this park might be facilitated and accelerated.
144. What would be the distance from Sydney to Manly by way of the proposed bridge? I suppose that if people had to leave Sydney and cross the North Shore the distance would be about 10 miles.
145. Are you aware of the altitude of the proposed bridge? I am not.
146. I believe it is proposed to make it 30 feet from high-water-mark? It looks something like that from the design.
147. From your experience of the traffic there, do you think that would be sufficiently high? Not for all the traffic; if the swing bridges were not included it would admit only the small craft.
148. Do you think that the construction of the bridge would impede the traffic, and thus depreciate the value of property higher up? I do not think the interference with the traffic would affect mercantile affairs; it might affect yachtsmen to some extent.
149. But would it affect the value of the property? To its advantage. When I first went down to Manly there were no roads on my hillside; but as soon as roads were laid out, and people got access to the land, property went up. An allotment of 50 by 150 feet sold readily at £30—that is to say the seller was glad to get it; but now you would not get any of the blocks under £400 or £500, though about six or eight years ago those lots sold for £30 each. I think the property between North Shore and the Spit would benefit even still more by the bridge.
150. You have, I suppose, frequently been up Middle Harbour,—above the Spit? Yes; I have taken boats up from the Waterfalls to the Spit.
151. What distance would that be? By water probably not much more than 1 mile; it might be 1½ mile or 2 miles, going up past the Quaker's Hat.
152. You think it would be a great advantage to have the bridge constructed across the Spit? An undoubted advantage, and I should say that the sooner it was constructed the better.
153. *Mr. Abbott.*] Have you gone into any calculation to show what the cost of the bridge would be likely to be as an annual charge against the public? No.
154. That has not entered into your consideration at all? No.
155. That is a matter of the most perfect indifference to the land owners of Manly? I do not know what area of land the Government still hold there, although if it is anything appreciable the increase to its value will be so great that the mere cost of the construction of the bridge will be a trifle.
156. If the Government want to get access to the Crown lands on the eastern side of the harbour there are places higher up, are there not, which could be bridged directly to these lands, giving direct communication; that is to say if the object of the Government is merely to give access to the land? From what I have seen of the elevations I should think it would be possible to put a bridge across in many places.
157. Do you think the Government would be justified in imposing upon the public for all time an annual charge of £3,604 for this bridge? Yes, more than justified.
158. In what way? Because of the price at which they would be able to sell the land.
159. You are assuming that this is the only place at which the Government can get approach to their Crown lands;—suppose they can get a better approach to the land which they have on that side of Middle Harbour,—do you think there would then be any justification for inflicting this charge upon the public every year? Well, I should say there would be no justification for adopting an inferior in preference to a superior approach, if a superior one could be found.
160. Is it not a fact that a great proportion of the houses at Manly Beach are vacant for a considerable portion of the year? During the last two years a great many houses have been vacant.
161. Are not a great many of them vacant in the winter? There are no more vacant in winter than in summer.
162. Do you not think the bulk of the people live there for the sake of the sea trip? Do you mean the present residents?
163. Yes? No; I do not think so. In my own case, I can say certainly not.
164. Would you come round by the road into Sydney if you had this bridge? I am half afraid that if there were an awful storm one morning I should prefer the bridge.
165. But with or without storm, would you come overland to Sydney in preference to taking the salt-water trip? Certainly not; that is, not as a rule.
166. It would be a sort of appendix to the pleasnre of living at Manly? Yes; and it would perhaps enable us to get to town at times when the steamers were not running.
167. Would not a steam-punt give you all the accommodation you require for casual trips? Well, then you would deprive a great many country visitors of a pleasant trip.

168.

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T. Littlejohn, Esq.
30 Nov., 1888.

168. Would not the steam-punt do for them? I do not think it would be capable of accommodating the immense volume of traffic.
169. Do you mean to say that country visitors are so fond of travelling by land that they will go across to North Shore for the purpose of getting a land trip to Manly? Many of them would not come through Sydney. I anticipate the time when North Shore will be a large portion of this immense city, with direct communication all over the Colony. I presume that they would come down to Manly from places at which they were staying on the North Shore—perhaps to visit my projected park.
170. You are assuming that the country will give up the land for the purpose of forming this park? Yes.
171. And upon that assumption you think the bridge ought to be built? Well, that is one of the features of the case.
172. Have you any idea of the value of the proposed park at Manly? I have not the slightest idea; but I am sure that it would be almost a hundred times greater than it is now in the course of a few years.
173. Is it worth half a million now? I should say more—its prospective value is incalculable.
174. *Mr. Copeland.*] Have you any idea how many of the people residing at Manly keep buggies? I can't say exactly; I think I know personally of about half-a-dozen.
175. How long does it generally take the steamers to travel from Manly to Sydney? The ordinary steamers, excluding the smallest and the oldest, do it in about half an hour and five minutes from wharf to wharf.
176. How many miles is it driving from Manly to Sydney and excluding the crossing in the punt at North Shore? I should say it would be a little over 10 miles.
177. Where would you cross the Parramatta River to make the distance 10 miles? I scarcely understand your question, as to the Parramatta River.
178. You would have to cross the Parramatta River if you did not use the North Shore ferry? That is a different thing altogether; I do not know where you would cross the Parramatta River, unless you went to Ryde, or to the bridge at Gladesville.
179. Well, can you give me the distance from Manly to Sydney by way of the Gladesville Bridge? No, I cannot.
180. Would it be 20 miles? I should not be surprised if it were 25 miles.
181. If you had to drive all the way from Manly to Sydney, then, the distance would be over 20 miles? At the present moment.
182. That is unless you made use of the North Shore ferry? Exactly so.
183. Is there any greater difficulty in using the steam ferry at Middle Harbour than exists in using the steam ferry at the North Shore; you see you would have to use one ferry, even if you had a bridge at Middle Harbour? No; I cannot see that there is any greater difficulty, but it would be a great advantage if carriages could go all the way from North Shore without having to use a ferry.
184. But you could not go all the way from Sydney without a ferry, unless you had a bridge over from North Shore? We want both bridges.
185. Could not the bridge at the Spit wait until you get the bridge from North Shore? I think it would be very advisable to accept that which is offered first, and to wait for the next.
186. You will take all you can get, and look for more? Just so.
187. What is the freight per ton of goods from Sydney or Manly? I cannot say, I have had no experience of it.
188. Do you think that if this bridge were built you would be able to get your goods from Sydney at a cheaper rate by road than you now pay by the steamers? I believe so, and with far less trouble.
189. By what means of carriage? It would have to be at present by drays.
190. You think the drays could take the goods overland better than the steamers could take them? I think so, for lately the steamboat company have imposed wharfage rates upon goods landed at their jetty in Manly.
191. And you cannot tell us what the steamer freight is? I cannot, except for small packages, and that would be no guide. I know that one or two of my neighbours have had furniture brought down by land across the Spit, as it exists at present, in preference to having it brought down by steamer.
192. The park of which you spoke is not yet planted? No; there is nothing but snakes there at present.
193. How long do you think it would take a park like that to grow in order to become attractive? I should think that after the formation of the plantations two or three years would be enough to make them show well.
194. You think we have not enough parks in the neighbourhood of Sydney without having another at North Head? None of them can equal it.
195. You seem to think that the time is at hand when Sydney will become a suburb of the North Shore, and when people will go there direct without troubling Sydney at all? I do not think I put it in that way, but of course they would each be parts of a large city.
196. *Mr. Watson.*] How far does Middle Harbour extend from the Spit inland? I have myself been up beyond the Spit 4 or 5 miles, I think.
197. Is the land all sold on each side of the harbour? I do not know.
198. Do you not think that its value would be depreciated if a bridge were built there? Certainly not, because the access would be constantly improving.
199. Do you not think the bridge would affect the traffic? I think it would in one way—it would increase it.
200. Up Middle Harbour? Everywhere, all round about.
201. I think you mean that the traffic would be increased between North Shore and Middle Harbour; but I am speaking of the traffic up towards the head of Middle Harbour;—do you think that that would be increased? I think the bridge would increase the traffic to every place in the locality nearly. You would have roads made all through the adjoining land I suppose, and wherever roads are made land increases in value.
202. Would not the traffic towards the head of Middle Harbour by water be impeded? It would to an extent; that is, in so far as vessels whose masts were higher than 30 feet would be precluded from going up except through the swing bridges.
203. Consequently the land would be depreciated because there would not be the same amount of traffic? You must have regard to the kind of craft going up; anything with masts under 30 feet would be able to go up with ease.

204.

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T. Littlejohn, Esq. 30 Nov., 1888.

204. Well, take pleasure yachts for instance? Two or three on Saturday night or on Sunday would be all that would go that way.
205. Do you think the country would be justified in giving half a million's worth of land for a park for the people of Manly? It would not be for Manly; it would be for the people of New South Wales, in fact for the whole world.
206. You already have two parks at Manly have you not? Well, I know of one.
207. Do you think that if this bridge were erected you would often drive to Sydney—except in time of tempest? It is quite possible.
208. You would drop your buggy at North Shore and come over to your business in Sydney by the ferry? Yes, until Sir Henry Parkes' bridge is built.
209. What might the population of Manly be? I think the mayor or aldermen would be better able to tell you that; I have heard 4,000 named as the total population.
210. If the Government decided upon the recommendation of the Committee to build this bridge at the expense of £70,000, it would be for the convenience of 4,000 people? No. And, as I explained at the outset, some of us do not want the bridge, or any such interference with our quiet and comfort. Many people at Manly do not want the bridge. It is from public motives that I speak in its favour.
211. Do you know of any people of your own knowledge who do not want the bridge? Yes; some of my own family.
212. They do not want it? Well, they say that it will interfere with our quietness; but I do not think their judgment in the matter is very good.
213. *Mr. Abbott.*] Is there not just a possibility of a population springing up on the hills surrounding Middle Harbour, along the top from North Shore, and on the other side where there are Crown lands? I think there is a great possibility of it, and I think this bridge would help it.
214. Would not this bridge obstruct direct communication with those places? By water, no; because the swing bridge could be easily moved. I have crossed at Balmain frequently. Certainly a delay of 5 minutes when you are coming into business in the morning is not agreeable, but the bridge-keeper would see the craft coming along on either side at a considerable distance. They would have their signals hoisted, and there need be no delay whatever. If the bridge-keeper were ready for them they would not be more than a minute going through.
215. *Mr. Suttor.*] There is a large amount of private property in Manly? A good deal.
216. Have you any idea as to the value of it altogether? It has been of shifting value lately.
217. Upwards or downwards? Downwards.
218. Still there has been a general increase in value? Yes; I have already given you an instance of the increase in the value of the land there.
219. If this bridge is erected I suppose property will increase still more in value? I do not think very much for a considerable time; I have not been taking that feature into consideration at all.
220. But if the bridge leads to an increase of the population there will surely be an increase in value? Well, we have public accommodation for visitors, and we look for an immense influx of strangers and others to the place as time goes on.
221. Suppose this Committee recommended that the bridge be not erected, do you think the people of Manly would take the matter into their own hands and build the bridge themselves? I do not think so.
222. Do you think it would pay a company to have a bridge there? I dare say it might.

Thomas Buckland, Esq., sworn and examined:—

T. Buckland, Esq. 30 Nov., 1888.

223. *Chairman.*] You are an old resident of Sydney? Yes.
224. You have lived here for a great number of years? I have been connected with business at the corner of Market-street for fifty-five years.
225. You have heard of the proposal to construct a bridge over Middle Harbour at the Spit? Yes.
226. You take some interest in the proposed work? I do.
227. Are you the owner of any land there? Not one acre.
228. You know the country pretty well? I do.
229. Do you think it would be desirable to construct a bridge over the Spit there? I think that unless there is sufficient headway left for any sailing vessel to pass under whose depth of draft would enable it to pass the Spit, it should not be constructed. I come to that conclusion from what has happened in connection with the Pyrmont Bridge. When that was proposed there would have been, I think, strong opposition to it—sufficient, I think, to prevent it from being built; but, unfortunately, all the water frontage in Cockle Bay was in the hands of persons who were either trustees, or executors, or absentees. When I tried to get up an opposition to the bridge, I was met with that difficulty—I had no one to back me up. The effect of the building of the bridge was that the rental went down one-third. In some cases, when the leases fell out, I think the rent went down a great deal more. I am sorry to say that last Saturday there was a fire in my office; and what with fire and water, I am very much in the position of being between the Devil and the deep sea. My premises have been saturated with water, or I would have endeavoured to produce for you some papers from which you could have obtained some valuable facts. But speaking from memory, the rent of my own wharf went down from £500 to £300, and subsequently to £2 10s. a week. The rent of the Albion Wharf went down from £900 or £960 to £700 and to £600. The next wharf (Sheldon's) was used only for slaughtering and for the sale of meat. I think that nothing was afterwards obtained for Street's Wharf for wharfage.
230. You think the bridge was a mistake then? Well, the rents went down a third or more.
231. Do you think the construction of a bridge across the Spit would lead to a parallel result? Yes. There was a large coasting trade in Darling Harbour. It is important that coasters should get in and out as quickly as possible, and the delay in opening the bridge made a difference in the length of the trips.
232. There are no wharves or any improvement for the purpose of commerce up Middle Harbour now? No.
233. You think there will be in the course of years? My view is that people who have gone up the line to live, at Burwood, Ashfield, or Homebush, will leave those suburbs as they become more thickly crowded, and will go to more healthy sites on sandhills and sandstone. I think that a lot of land at Middle Harbour is likely to be taken up as places of residence for retired people. Gradually, of course, North Shore will extend over in that direction. 234.

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T. Buckland, Esq. 30 Nov., 1888.

234. Are you aware of the height of the proposed bridge? I understand that it is to be 30 feet. Less than 120 feet would not allow many sailing vessels to go through unless they struck their top-gallant masts.
235. You are aware that it is proposed to have a swing bridge? Yes; that is the curse of the thing—waiting for the swing.
236. You are aware that the population of Manly Beach is largely increasing? Yes.
237. I suppose you recollect the time when there were a very few people at the North Shore? When we put up land there in 1853 at a reserve of 15s. per acre there were no bids; the other day I was taxed at £500 per acre. Fortunately the land was not my own. The old camping place at Manly, where we used to go shooting and fishing, is now a little city. No doubt a bridge would be a great improvement and convenience, but anything interfering with the access to any part of the harbour I should most strongly oppose. It puzzles me to think how any men could agree to such a thing; they must be mad. We are proud of, and boast of our beautiful harbour, and yet we put barriers across it to prevent access. The thing passes my comprehension.
238. I suppose you know that it is a great inconvenience to the people of Manly not to have any means of coming to Sydney by land? Of course a bridge would be an excellent thing so far as that is concerned.
239. Then you think it would be a good plan? Always supposing that you would allow sailing vessels whose draft would allow them to pass the Spit to pass through without any inconvenience.
240. You think that a bridge of the height proposed would be much too low? Much too low.
241. Do you know to what distance above the Spit the water is navigable? I am not aware.
242. I mean for boats? I do not know what depth the channel would give.
243. They are commencing to build houses above the Spit, are they not? A few, not many; but the other part of North Shore is like a city.
244. Do you think that a steam-punt would answer the requirements of the traffic at this point? I cannot say; it is a makeshift at the best. We had a steam-punt at North Shore at one time, but it was a great makeshift.
245. Have you ever travelled through America? No.
246. You have not been home since you first came out here? I have never been out of New South Wales since I came here except to New Zealand and Victoria.
247. *Mr. Abbott.*] If you were told that the annual cost of a bridge with iron approaches would be £4,227, do you think there would be any excuse for setting such a burden as that upon the people for many a day? Not unless there were access for sailing vessels to the upper part of the harbour. If you cut that off you would not only cause great inconvenience, but you would depreciate the value of all the Government property beyond.
248. Do you know the bays up in that part of the harbour pretty well? I do not. I have been round them often enough, but I have never taken particular notice. I know that there must be enormous water-frontages from the sinuosity of the bays.
249. Do you not think that a steam-punt would answer the traffic requirements of Middle Harbour for many a day? It would for some time, but it is a very poor convenience.
250. *Mr. Suttor.*] You think we ought to have a high-level bridge at Middle Harbour? If we had any at all.
251. Do you know what a high-level bridge would cost? I do not.
252. We have evidence that a high-level bridge would not cost less than £220,000? I do not think it could be done for that money.
253. Would you recommend such a bridge as that? Not until we get a much larger population there.

John George Griffin, Esq., Mayor of Manly, sworn and examined:—

J. G. Griffin, Esq. 30 Nov., 1888.

254. *Chairman.*] You are the Mayor of Manly? Yes.
255. And have been for some time? During this year.
256. You necessarily take an interest in all matters connected with the welfare of Manly? Certainly.
257. You are aware of the proposal to construct a bridge across the Spit on the road leading from Sydney to Manly? Yes.
258. Have you seen the design of the proposed bridge? I have.
259. You know its altitude? It is to be, I believe, 30 feet above high-water mark.
260. Would that be a desirable height? It would be quite sufficient for present requirements, and for some years to come.
261. There are swing bridges? Yes; two openings of 60 feet, I understand.
262. You think that would be sufficient for the traffic up the harbour? For many years to come.
263. Is it the case that the inhabitants on the north side of Manly Beach and the districts beyond suffer inconvenience through not having means of access to Sydney by land? Yes; they frequently suffer great inconvenience.
264. The present means of traffic is rather primitive? Across the Spit it is absurdly inadequate.
265. It is an ordinary punt? Yes; worked by a pulley and ropes.
266. Have you ever considered the practicability of having a steam-punt there? It is a temporary expedient; it would be better than the present means; but it would not be anything like the accommodation which the district demands and, I think, deserves.
267. Are you aware of the cost of the proposed bridge? From £60,000 to £70,000, I understand.
268. Have you heard of any estimate for a high-level bridge? I fancy from my own knowledge, that it would cost something like a quarter of a million.
269. Which would you consider the most desirable work, having regard to the present condition of the country's finances and the convenience afforded? I should prefer to have the low-level bridge, not only on account of the country's finances but from another point of view. If a high-level bridge were erected, it would not be at this place, but further down towards the mouth of the harbour, where the most suitable approaches could be obtained. There a very large reef exists in the harbour, and that must necessarily be blown up and removed before any vessel of size could get up. If a bridge were put up there it would have to be pulled down before this blasting could go on.
270. Are you aware of the extent of navigable water above the Spit? Not in square miles, but I know it is considerable; I know that the Harbour extends for some miles.

271.

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J. G. Griffin, Esq. 30 Nov., 1888.

271. Is it navigable for ordinary yachts? Yes, and pleasure boats.
272. Do you think it is likely to become a great place of residence? I think so, but it is used now chiefly for pleasure, and no bridge such as this would prevent that. It would be quite easy for any yacht to lower her mast if she wanted to go under. If the bridge were opened, any yacht ten times the size of our biggest yacht could get up, that is if she could get over the reef to which I referred.
273. You think that the bridge would be essentially a convenience for the people of Manly Beach and the north side of the harbour? Not only a convenience, but a mere act of justice, I think.
274. Do you think it would increase the value of the land? Very largely; the Government land would be largely increased in value.
275. I suppose that if the bridge were constructed the vehicular traffic would be increased? Very largely I should say. There would be probably 150,000 persons travelling over it in the course of the year.
276. And through the difficulty of access this means of traffic is not resorted to at all now? No, very little. Although it has largely increased, yet it is comparatively little when you consider the importance of Sydney, and the advantages of Manly.
277. Have you a park at Manly? Only small reserves in and about the town; nothing very great except the frontage to the ocean. We hope to have a park ultimately at the Quarantine Ground.
278. Has any application been made for a park? We hope to have one when the Quarantine is removed.
279. Has the municipality applied to have the land reserved for a park? Not yet.
280. Do they intend to do so? Yes, I believe so.
281. What is the extent of land they intend to apply for? We shall be glad to get 60, 80, or 100 acres.
282. You think it would make an attractive place of resort? Yes. The park land we at present have is small, but it is attractive. Of course, we have spent a great deal of money upon it.
283. *Mr. Abbott.*] What would be the annual cost of this bridge—in the shape of interest, depreciation, maintenance, and repair? The maintenance would depend upon the class of work used for the swing; I suppose two men would be wanted.
284. Assuming that we have hand-power? Yes; their wages would come to £4 a week.
285. Do you think the present requirements of Manly Beach justify the Government in incurring an annual expense of between £3,000 and £4,000 for this bridge? I did not know it would cost as much.
286. You see that the figures in Mr. Bennett's report make the annual charge £3,604? Yes; that is so according to those figures.
287. Do you think there is anything to justify that expenditure at the present time? Certainly. In the first place I think the convenience of the inhabitants of Manly Beach deserves consideration. The population approaches 5,000. Then we have a large floating population—floating in two senses; their convenience should also be considered. Thirdly, I think the whole Colony would be benefited by the expenditure, because Manly is admitted to be the only watering place. At present it cannot be nearly so much used by people in the country as it would if there were proper means of approach. The steamers are frequently very uncomfortable in rough weather, and sometimes are unable to run.
288. Do you think that many of your fixed population would use this road if the bridge were constructed? A great many would use the road, especially ladies; I suppose there would be a tram, or something of that kind.
289. You say that the road would also be used by a floating population, and that that is another reason for building it? Yes.
290. Is it not a matter of history that the floating population go to Manly Beach for the sake of the sea trip? I think that a great many would go down more frequently if they could do so without the fear of getting sea-sick.
291. How many houses are there in your municipal boundary? About 900 I think, but I cannot say exactly.
292. What is the capital value of the property rated in the municipality? I think it is £70,000, but I cannot say from memory.
293. And what do the rates amount to? They come to over £3,600.
294. Would it be any great convenience to business people coming to Sydney to have this bridge built, without a bridge from the North Shore? We hope to have that bridge some day. Perhaps I should mention one other circumstance which I think should weigh with the committee. The road may be desirable from a military point of view; a time may come when it will be necessary to take troops to Manly, and if so, I am sure that a punt of any kind would not be the proper means of getting them over this arm of the Harbour.
295. *Mr. Copeland.*] I suppose this bridge would be serviceable for many years if built? Yes.
296. How many years would it last? For 100 years, perhaps; it depends upon the life of the iron.
297. You think this bridge would give sufficient accommodation for many years? For fifty years, I should say.
298. Do you think that if a low-level bridge were erected there would be any chance of that being removed and a high-level bridge being erected in its place? Yes; there would be nothing to interfere with it, because the high-level bridge would not be erected in the same place.
299. You would not object to the two bridges, I suppose? Oh, dear no.
300. Do you not think that the building of a low-level bridge would stand in the way of your getting a high-level bridge? I think we are quite prepared to run the risk.
301. You are quite prepared to take what you can get, and to wait for a high-level bridge? Yes. If you were to poll 20,000 persons who would be benefited by it, I am sure the bulk of them would be in favour of that course. I have heard it stated that the desire for this bridge is to further a tramway which is about to be made; but such is not the case, because we had a promise from the Government that the bridge should be erected before the tramway was considered. I think it is only right that I should say that.
302. Can you tell me what is the freight per ton upon goods from Sydney to Manly by steamer? I think it is 2s. 6d., but I am not sure.
303. I take it for granted that you get your stores from Sydney? Yes, everything.
304. If this bridge were constructed, do you think the goods would be carried by road? I do not think so; the goods would of course go by the cheapest route.
305. And you think that water carriage would be cheaper? It always is; I do not think there can be any question about that.
306. How many miles would it be driving from Manly to Sydney? About 7 miles.
307. That is assuming you cross by the steam ferry at North Shore? Yes.

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J. G. Griffin, Esq. 30 Nov., 1888.

308. Is there not an objection to crossing by ferry from North Shore to Sydney? That is the only way in which you can cross.
309. Is it not looked upon as an objectionable method of crossing? Of course a bridge would be better than a ferry.
310. Suppose you had a bridge over the Spit, would you still continue to make use of the North Shore ferry? You must do it until a bridge is made from Sydney to the North Shore.
311. Then it would not be looked upon as a great inconvenience while driving part of the way to cross by steam ferry from North Shore to Sydney? It is such a short distance.
312. How far would it be if you had to drive the whole distance? If you were to go round by Lane Cove, I suppose you would have to cover about 20 miles.
313. As a matter of fact, if you were to have this bridge, those who drive would still have to use one steam ferry? Yes; I think that very few would object to crossing by steam ferry from North Shore; the ferry is comparatively large, and the distance is short.
314. Suppose you provided a similar ferry to that at North Shore,—would there be any objection on the part of the inhabitants to using it? Well they would not like it nearly so well as the proposed bridge.
315. They would not like the steam ferry at the Spit but they do not object to it from North Shore? Well, the distance is greater.
316. Do you say that the distance at the Spit is greater than the distance at North Shore? Yes. At any rate it is more exposed. The present means of getting on to the punt and the punt itself are very inferior.
317. Do you really think that the distance is greater at the Spit than at North Shore? I should think it was; I am speaking from memory; I may be wrong.
318. Could you tell us how many people would be likely to use this land route if a bridge were built? I think that perhaps half the people would come this way. The population would increase, especially in the neighbourhood of the bridge.
319. How many people residing at Manly do you suppose are in the habit of coming to Sydney every day? 400 or 500, I suppose.
320. You mean business people? Yes.
321. Do you think that number come to Sydney by the boats every day? Yes.
322. If you had a bridge over the Spit and had to cross by the North Shore steam ferry how long would it take to make the journey by that route? I suppose it would take an hour and a half at the outside from end to end.
323. How long does it take the steamers to make the journey from wharf to wharf? The quickest is about 35 minutes, but I suppose the average would be about 45 or 50 minutes. Of course it would not take an hour and a half, but it might sometimes take an hour.
324. Do you think that a large section of the business people of Manly would spend an hour and a half in getting to Sydney by one route when they could reach it in half an hour by another route? My answer to that is that I anticipate a tramway being put down in the future; this bridge is designed to carry a tramway.
325. How long do you think the journey will take by tram? About the same time as by steamer; probably less.
326. Suppose a vessel happened to be passing through the swing bridge when a tram came along,—would not a great deal of delay necessarily take place? I suppose the Government in their wisdom would make regulations to prevent the bridge being open when a tram was likely to cross.
327. The shipping would have to give way to the trams? Yes. They could come up at certain specified hours. Of course they must not be allowed to impede the general traffic. The greater number of vessels would be pleasure boats.
328. How many trams would it be necessary to run backwards and forwards in a day? I should say about three or four morning and evening; say six or eight a day.
329. How long would it take these trams to do the journey? I cannot tell you without knowing something of the gradients, and so on. I do not suppose it would take more than the ordinary tram rate of 7 miles.
330. Would it take an hour? I do not think it would take so long as that.
331. Do you know the general rate of speed at which trams run in Sydney? I suppose from 10 to 20 miles an hour.
332. Are you not aware that the trams travel from 7 to 8 miles an hour? As a matter of fact I am not.
333. Notwithstanding that you are an engineer? I have not had occasion to find out at what rate the Government run their trams. I am sure that upon the line I am suggesting the trams could travel more quickly than in the Sydney streets. In the first place, the stopping places would not be so frequent, and there would be greater lengths of line upon which the trams could travel more quickly without doing any harm.
334. You say it would take an hour to go from Sydney to North Shore, but you would still have to cross by the ferry? Yes.
335. Adding the time for which you might have to wait for a ferry, and the time occupied in crossing, it would probably take an hour and a quarter that way;—I suppose it would take an hour to get into the city of Sydney by either route? Yes.
336. It has been given in evidence that the time made by the steamers is generally half-an-hour and 5 minutes? That is from wharf to wharf; it takes me about 50 minutes to get to my office.
337. *Mr. Kethel.*] It is a matter of fact I believe, that of late the traffic over the Spit Road at the punt has much increased? Yes.
338. To what extent has the population of Manly increased within the last four years? Very largely. The best way to ascertain that would be to look at the rates. The rates four years ago were under £2,000, now they approach £4,000.
339. Four or five years ago there was scarcely any traffic at all over the Spit Road, I understand? So much so that the Government had to pay someone to keep the punt; now they receive a good rent from it.
340. How do you account for the difference in the proportion of the traffic over and above the increase in the population;—the population of Manly, for instance, has doubled in four or five years, but the traffic over the Spit has quadrupled, and more than that,—it has I suppose increased tenfold? I think the increased traffic to which you refer is largely due to people coming from the North Shore to Manly—visitors and others.

341.

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J. G. Griffin, Esq. 30 Nov., 1888.

341. What is the nature of the traffic over the Spit; does it consist chiefly of private vehicles or of freight-carrying? There is very little freight; it consists mostly of private vehicles.
342. Is it not a fact that when the punt capsized a few months ago there were laden drays upon it? I think not; loaded drays go down only occasionally. For instance, a person sending furniture would have to load and unload three or four times if he sent it by steamer; whereas, if he sends it over to North Shore by dray it goes over the punt straight to his house. That occasionally happens.
343. The bulk of the goods go down by steamer? Yes; and I suppose they always will.
344. Because of the cheapness of the carriage? Yes.
345. Would this work affect the people of North Shore in any way? I think that all sensible people would be in favour of it.
346. Are there any business relations between the Manly people and the North Shore people? The Manly people transact their business chiefly with Sydney.
347. *Mr. Garrard.*] Do you know Middle Harbour? Yes.
348. Is it likely that a great amount of commerce will be carried on on the shores of Middle Harbour in the future? Not for many years; no big vessel will be able to get up there until the reef has been removed.
349. The land all round is rather abrupt? Yes.
350. I suppose the land will be used chiefly for residence sites? Yes; for many years to come.
351. Do you know if the Crown has much land on the northern side of Middle Harbour? A good deal.
352. Shore frontages I mean more particularly? That I do not know.
353. The approaches to the Spit have been much improved of late. Yes.
354. The lower part is still very steep; from the water's edge about 100 yards up? Yes; but the approaches as a whole are very much improved.
355. I suppose the road is steeper there than on any other part of it? On the northern side it is; yes.
356. Do you think that if this bridge were erected, there being no bridge from North Shore to Sydney, the people of Manly would get their supplies from St. Leonards instead of from Sydney? I don't know but they might.
357. You do not know the extent of the reef at the proposed site for a high-level bridge? I know it is very extensive.
358. I believe there are about 9 feet of water on it? Yes.
359. That would preclude any large vessel from going up? Yes.
360. How long would it take to open the swing bridge? That depends upon the machinery; I suppose from 5 to 10 minutes.
361. That would be by hand-power? Yes.
362. It would not take so long by steam? No.
363. You do not think the proposed tramway company would erect a bridge if the Government did not do so? I do not.
364. *Mr. Suttor.*] Are you aware that there is a Bill before Parliament authorizing certain people to make a tram through Manly? Yes.
365. Are you aware that the Bill proposes that a steam-punt should be used and not a bridge? I do not know; but if it is so, it ought not to be countenanced.
366. You said just now that the bridge might be used for military purposes? Yes.
367. Under what circumstances? I understand that the present Quarantine Ground is to be fortified, and the bridge would be of service in taking troops to and from those fortifications; also from North Head and Manly to George's and Middle Head.
368. If a tram company can use a steam-punt, would it not be sufficient for military purposes? I do not think it would be at all a proper thing to allow a tramway company to use a punt; I never heard of a tramway company using them, except in the case of the enormous ferries in use at San Francisco.
369. Is Manly a place which an enemy could attack very easily? Yes.
370. In that case you would have to blow up the bridge? It would not be very difficult to do that.
371. *Mr. Abbott.*] Are you aware whether any of the Manly Beach people are opposed to the construction of this bridge? I have not heard of a single one.
372. Do you know Mr. Littlejohn? Yes.
373. He says that there are people who object to it? I think that some of his children oppose it. No sensible person, whether he has or has not property at Manly, to whom I have spoken, but has been in favour of it.
374. Would private property in Manly be improved in value by the construction of that bridge? Not particularly. An improved means of communication would, of course, improve the place; but I do not know that it would put property up very much, if at all, in the town itself.
375. The bridge, you think, would be useless so far as the value of property is concerned? It would improve the Government property in the neighbourhood; that is to say, it would sell very much better with a bridge there.
376. *Mr. Copeland.*] I suppose there has been a great deal of speculation in land at Manly recently? Not recently; two years ago there was; there have been some Government sales lately, that is all.
377. I take it for granted that you yourself are considerably interested in land at Manly? Yes.
378. So that, while this bridge will benefit the Crown lands, it would also benefit your own? Not to a great extent. I do not think there will be any improvement in the town save that which generally takes place with improved means of communication, but the Government land in the district would certainly be improved in value.
379. Would the bridge not create a little boom? I do not think so; I should hope not.

Charles H. Hayes, Esq., Alderman of Manly, sworn and examined:

C. H. Hayes, Esq. 30 Nov., 1888.

380. *Chairman.*] You reside at Manly Beach, I think? Yes.
381. You have lived there some time? Sixteen years.
382. You have been Mayor of Manly? Yes, for three years.
383. Are you a member of the Corporation now? Yes; an alderman.
384. Manly, I suppose, has made considerable strides lately? Yes; great progress.
385. Are you aware of the site of the proposed bridge over Middle Harbour? Yes.
386. Do you think it a desirable site? I think so.

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C. H. Hayes, Esq.
30 Nov., 1888.

387. You think the bridge is a necessary improvement? I do.
388. Do you know the nature of the design at all? Yes; I have seen a plan.
389. Do you think the altitude is sufficiently great? I am told the altitude is 30 feet clear of high water-mark, and I think that will take the ordinary traffic without opening the swing.
390. It is proposed to have two openings? Yes; I see there are two openings of 60 feet each.
391. You think that would be sufficient to permit of vessels going backwards and forwards without hindrance or impediment? I think so.
392. Is it the case that considerable inconvenience has been felt through not having this means of communication overland? Yes; great inconvenience.
393. Is it not the case that property has been lost from time to time in consequence of the present arrangement? Yes; accidents have happened at the Spit.
394. Do you know much of the harbour above the proposed bridge? Yes; I know Middle Harbour pretty well.
395. It is a great place of resort? Yes, for yachtsmen.
396. I take it that it is not used for residential purposes to any extent? No, nor for commercial purposes.
397. Have you formed an opinion as to the effect of the bridge, from a commercial point of view, in time to come? I do not think there will be any great increase in the traffic up the harbour, from a commercial point of view.
398. Will the construction of the bridge improve or lessen the value of property above it? I do not think that with the openings provided the bridge would interfere in any way with the value of the frontages to the harbour.
399. Will the bridge add to the value of the property at Manly? Considerably, no doubt; also to that of large areas of Government land.
400. Are you a property owner? To a very small extent.
401. Your property would be increased in value, I take it? I think it would.
402. And the property of the ratepayers generally? I think the whole municipality would be benefited.
403. The whole work is regarded by the municipality as a very proper one? Yes.
404. And a spirit of philanthrophy leads the inhabitants to think that it would add largely to the value of the Government land? Yes.
405. Do you know the area of Government land? Many thousand acres; I could not give you the particulars.
406. What Government subdivision would be nearest to the proposed bridge? Dobroyd subdivision; it would be about a mile and a half away.
407. Is that on the northern side of Middle Harbour? Yes.
408. Then there is Government land still further behind it? Yes; there is the Harbord subdivision about a mile or so out of the municipal boundary. Only a very small portion of it is sold. Then there is a great quantity of land between Narrabeen and Pittwater, to which this bridge would give access.
409. Do you think a high-level bridge is feasible? Yes; I think so. You must have regard to the expenditure incurred in making approaches to the waters of Middle Harbour by the labour of the so-called unemployed. A few years ago they made a splendid road, making approaches to the site of the proposed low-level bridge. At one time I thought that a high-level bridge would be necessary. I did not think we should be able to get a gradient to take vehicles safely down to the waters of the harbour; but that difficulty having been overcome I think a low-level bridge with swings would answer all purposes.
410. *Mr. Abbott.*] During the sixteen years you have been at Manly how often have you had to travel overland to Sydney by reason of stress of weather? I do not think more than half a dozen times.
411. Is that since you have had the present steamboat service? No.
412. That is the best you have ever had? Yes.
413. As a matter of fact the residents of Manly use the overland route very seldom, do they not? Not the residents.
414. I suppose as a matter of fact the residents of Manly look upon the road as rather an attractive drive than anything else? Well, a number of people have been prevented from living down at Manly in the absence of this road communication, feeling that they were cut off from the place after 11 o'clock at night.
415. There is a larger area of Crown lands in the upper part of Middle Harbour than down at Manly Beach? The largest portion is away beyond Narrabeen.
416. Do you think the necessity for this bridge would justify an annual charge of between £3,000 and £4,000? I think so.
417. Why? I think it would be a profitable investment, looking at the large area of Crown lands yet unalienated.
418. Have the Government had any difficulty in selling the land which they have heretofore offered for sale? There has been no difficulty that I know of in selling land in any part of the country. The policy of successive Governments, as you know, has been first to sell the land and then to make railways through it.
419. Has there been no difficulty in the Government alienating the land which they have offered for sale down about Manly and Narrabeen? There was some difficulty at Dobroyd, but the sale of that subdivision would have paid the cost of this bridge if the sale had been conducted upon and regulated by sound commercial principles.
420. Do you know whether the land was offered at a time when the Government had no power to grant deferred payments? That is a question I could not answer.
421. Do you know when it took place? About two years ago.
422. When you refer to commercial principles do you refer to the principle of giving terms? What I mean is that the Government should deal with the land as a private estate would be dealt with, and that they should get the benefit of the improvements in their sale instead of selling the land and making the improvements afterwards.

THURSDAY,

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THURSDAY, 6 *DECEMBER*, 1888.

Present:—

THE HONORABLE JOHN LACKEY (CHAIRMAN).

THE HON. GEORGE CAMPBELL,	JACOB GARRARD, ESQ.,
THE HON. WILLIAM HENRY SUTTOR,	ALEXANDER KETHEL, ESQ.,
THE HON. JAMES WATSON,	SYDNEY SMITH, ESQ.,
THE HON. FREDERICK THOMAS HUMPHERY,	THOMAS MICHAEL SLATTERY, ESQ.,
JOSEPH PALMER ABBOTT, ESQ.,	JOHN RENDELL STREET, ESQ.,
HENRY COPELAND, ESQ.,	DANIEL O'CONNOR, ESQ.

The Committee further considered the proposed bridge at The Spit, Middle Harbour.

Alexander Dean, Esq., J.P., sworn and examined:—

A. Dean, Esq., J.P. 6 Dec., 1888.

423. *Chairman.*] You are an old colonist, Mr. Dean? Yes.
424. You are now living at Manly? Yes.
425. You travel backwards and forwards pretty frequently? Daily.
426. And you have a tolerably good knowledge of the traffic between Manly and Sydney? Yes.
427. Do you know the site of the proposed bridge over the Spit at Middle Harbour? I do.
428. Do you think it is a good situation for a bridge? I do; I believe nature has provided a situation for it.
429. Do the residents of Manly suffer inconvenience from want of land communication? They do.
430. Manly is a favourite resort? It has been for many years.
431. Do you think it would increase if additional accommodation were given by the construction of a bridge? Yes, not only Manly Beach, but the whole of the western portion—the tableland near the Spit.
432. There is a large extent of vacant land behind Manly—right out to Broken Bay? Yes.
433. A great deal of that is Government land? Yes.
434. And I suppose its value would be considerably enhanced? Very much so.
435. Are you a maritime man;—do you take any interest in boating? I did when I was a boy; but of late years I do not.
436. You do not keep a yacht? No.
437. Do you think the construction of the bridge would be an impediment to the navigation of the harbour above the Spit? No; I do not. It would be very simply remedied. I have been in many countries, and have seen bridges over many rivers and lakes; and I know that if a signal were given by a yacht as she rounded the point at Middle Head, the bridge could be opened before she came up.
438. The proposed bridge is a swing bridge? Yes; and it would be very simply opened; I do not think there would be any difficulty at all to the yachting. Of course I would be very sorry to stop the yachting on the harbour, because it is one of the finest harbours in the world for the purpose.
439. It is a pretty resort above the Spit, is it not? It is.
440. It is likely to become a great resort for submarine residences? Yes; both on the south side of Middle Harbour and on the north side. It will become a great outlet for the retired merchants of Sydney. It is the healthiest part of the city. We are bounded to the south by Botany, and to the west by the railways, Parramatta, Balmain, and all those places. Here there is a great tract of country that can be utilised for the relief of the city an easy distance away.
441. Communication now is carried on in a very primitive way? Yes; a punt worked by a wheel.
442. Do they use Chinese labour? I did not notice that.
443. *Mr. Copeland.*] You say the people of Manly suffer great inconvenience through the want of this bridge? There are many females down there who are very timid, and in very severe weather we have as rough seas inside the Heads as I ever saw in my life. Of course they do not come very often in the year, but on several instances I have seen timid ladies frightened to take their children back. If there were a bridge across the Spit, they would hire a conveyance and take their children across, but they are afraid of the punt.
444. Do you think ladies and children would be very desirous of being out in bad weather like that? Sometimes they leave Sydney without knowing what sort of weather it is at Manly, and then they are frightened to go back. I myself once took an old lady, 76 years of age, with two boys, right round the Spit, and walked to the North Shore, because she was afraid to go by boat.
445. How often do you think the residents of Manly would suffer the inconvenience of being saddled with an old lady 76 years of age, with two children? I am only citing an instance that came under my own notice, and I know other instances where ladies have been timid about crossing the Heads during rough weather.
446. Do you think these inconveniences would be sufficient to warrant us in proposing a continuous tax on the country for all time to the amount of about £4,000 a year, which is the difference between the cost of maintaining the bridge and the cost of maintaining a steam-punt? Manly Beach of course would reap the benefit by a bridge, but the bridge would open up a large tract of Government land, which would pay for the outlay on the bridge in a very short time.
447. Do you think the inconvenience would not be removed if a steam-punt were put there, giving the same accommodation as at present exists between Sydney and North Shore? No punt could give the convenience a bridge would.
448. Is there any complaint about the accommodation provided between Sydney and North Shore? I am not aware of any.
449. Then, if the Government provided you with similar accommodation across the Spit, what is now provided by a private company for the North Shore, would not that remove all difficulties? No; the time would be the great thing. The punt would be either on one side or the other, whereas the steam ferries come in almost every minute.
450. *Mr. Abbott.*] Every minute at the North Shore? Well, every 10 minutes.
451. *Mr. Copeland.*] Do you know, as a matter of fact, how often the steam ferry runs to North Shore? I do not know.
452. Is it as far across Middle Harbour as from Sydney to North Shore? No. 453.

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A. Dean, Esq., J.P.
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453. Then in all probability the journey could be made in less time? Of course.
454. The people would be put to no greater inconvenience by having to use a steam-punt than the people at North Shore at present? There would be less of course, because the distance is less; but I do not think of the bridge so much for the Manly Beach people, who are well supplied now with the steamers. It would open up an immense tract of country, and benefit the Government.
455. Would not the steam-punt open up that country as well? No.
456. Why? Punts are never considered so much as a bridge. I have seen punts all over the world, and they do not think anything at all about them.
457. We are not going into the question what they think about them. Do they not give the convenience? Of course, to a certain extent, but the bridge would give more.
458. The only question would be whether you drove across the bridge, or whether the punt carried your buggy across. Once on the other side you have the same advantage of driving as if the bridge were constructed? But if the punt were on the other side you would have to wait so long.
459. Might you not have to wait for a long time if the bridge were open? The engineering appliances now for opening bridges are so very much improved that it could be done in 3 or 4 minutes.
460. Then there would be the time the vessel took going through, and 3 or 4 minutes to close it again, and, altogether, I think you would find it would take as long as it would take to cross on the steam-punt? Perhaps so.
461. *Mr. Watson.*] As the cost of this bridge is about £62,000, and the interest on the money, together with the cost of keeping the bridge in repair, would involve an expenditure of £4,000 a-year, do you think the country would be justified in going to such an expense for the emergencies you allude to? I do; because the country would benefit by opening up what is now useless ground, and making it of very great value.
462. *Mr. Street.*] We have it in evidence from the skilled engineers that the punt could run from either side every 10 minutes; do you think that is sufficient inconvenience for the people of Manly to necessitate such a large expenditure for the bridge? I do think it. The money would be well spent, because there is a feeling of uncertainty about a punt, and there is a feeling of comfort and surety about a bridge.
463. *Mr. O'Connor.*] Would the construction of the bridge be convenient to anyone besides those who reside at Manly Beach? It would be convenient to all. It would open up the great Military Road, and be a splendid drive for all the inhabitants of North Shore, and it would open up an immense tract of country to the north of Middle Harbour.
464. You have travelled a good deal over the world? Yes.
465. Have you ever seen, in a civilized country, a place with so many attractions so difficult of access as Manly Beach? I have never seen so many attractions as there are in New South Wales with less ways and means of getting at them. All through Switzerland there are steamers plying every hour of the day over the lakes.
466. There is a great tract of land belonging to the Government which would be opened up by the bridge? Yes.
467. There is a lot of unoccupied land which, if that bridge were constructed, would become the scene of busy life? Yes; the whole of that tract would be covered with gentlemen's residences. It is the finest scenery in the world, from North Shore along the Military Road across the Spit and along the table-land to Manly Beach; there is not a scene like it in the world. When I came back from home, in 1872, Professor Smith and I went down to George's Head, along the Military Road, and he said to me "You have been all over the world—did you ever see a finer sight than from the top of George's Head"? I said "Never," and I say so still.
468. *Mr. Kethel.*] What is the population of Manly and the district within a radius of 3 miles? I could not tell you; I think 3,000 or 4,000.
469. How many of that number would use the road to Sydney, provided the bridge were erected next year? It would be used more by the people of Sydney than by the people of Manly; it would be used as an afternoon drive to Manly. It would only be used by the Manly Beach people in cases of emergency, but by the residents of Sydney almost daily for drives. We have not now a drive about Sydney, except out to South Head, and this road would be used for drives by all the inhabitants of Sydney.
470. Then I understand that it is not for the convenience of the residents of Manly, but only to give visitors pleasant drives that you advocate the construction of this bridge? Yes, that is one of the causes. It would be of great convenience to the inhabitants of Manly Beach; it would be a great convenience and outlet for the people of Sydney; and it would be a great means of opening up an immense tract of country to the north of Middle Harbour.
471. A large proportion of the land you allude to has been alienated from the Crown, and the bridge would simply enhance the value of the property of private persons? I cannot tell how much of the ground is private property.
472. It has been stated that the expense of maintenance, added to the interest, would be something like £4,000 a year. If the inhabitants of Manly number 4,000, that would be a tax on the revenue of £1 per annum per head for the whole population that would be benefited. Is there any way that you can suggest, by which the Treasury would be recouped for that expenditure? Of course population would grow, and the bridge would almost pay for itself by tolls.
473. You are aware that the traffic from Sydney to North Shore is conducted entirely by steam ferry;—does it not appear to you peculiar to ask for a bridge to accommodate a small section of that traffic, while the main traffic is taken by steam ferry across Sydney Harbour? There is that feeling, but then the traffic from Sydney to North Shore is divided. Of course the main traffic is conveyed by steamers, but there are many other outlets by which people can get across to North Shore; they can get across by the bridge at Lane Cove.
474. How many miles is it from the Sydney Post Office to the St. Leonards Post Office by the bridge? It would be a long way.
475. Do you believe, as a citizen of many years standing, a contractor, and a public man of great experience, that you are justified in recommending to the Committee the construction of this bridge? I do.
476. And you deliberately say the public benefits to be derived by the inhabitants not only of Manly, but of Sydney and St. Leonards, would justify the expenditure? Yes; I am convinced I am right. It would be merely the foundation of a great advancement of that northern portion, which would be a good return for the outlay.

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A. Dean, Esq., J.P. 6 Dec., 1888.

477. *Mr. Suttor.*] You say the Military Road would form a very favourite drive? It would.
478. Are you aware that a company is being got up now to make a tramline along that road? Yes; I have heard of it.
479. Do you think people would use that as a drive if there were a tram running along? Of course that would affect it to a considerable extent.
480. Do you know that there is a very narrow and steep grade down to the bridge, very dangerous for people to drive along and meet a tramway? Yes; there is a steep grade.
481. Are you aware that the people who propose to carry out the tramway intend to use a steam-punt themselves? I am not aware of that.
482. Do you know whether the population of Manly is increasing at all? Not much, I think. There is a dullness in all suburbs now.
483. The present steamer accommodation is very much better than it was some time ago? Yes; very much better.
484. And at present, I suppose, there is not much inconvenience arising in connection with the steam accommodation? The steam accommodation, as I said before, is very good, but, at the same time the northern portion of Middle Harbour would be greatly enhanced in every way by ladies and gentlemen driving themselves.
485. What is the time occupied by the steamers coming from Manly to Sydney? Thirty-five to 40 minutes.
486. How long would it take to drive along the road by the bridge? I never drove it; I could not tell you.
487. Do you know the distance? I think about 9 miles.
488. It could not be done so quickly by the road as by the steamer? No; but it would save a great amount of timidity.
489. But I suppose these timid people like to live at Manly all the same? Yes; but I know one lady who has left Manly for a time on account of the uncertainty of the weather, as she always gets sick when crossing the Heads.
490. You have never had any fatal accidents with the steamers coming from Manly? No.

John Williams Deering, Esq., Metropolitan and Coast District Surveyor, sworn and examined:—

J. W. Deering, Esq. 6 Dec., 1888.

491. *Chairman.*] You have held your present position for some time? Four years.
492. You have some knowledge of the land belonging to the Government in the district where it is proposed to erect a bridge? Yes.
493. You know the country well? Yes; I surveyed the first road over the Spit thirty years ago.
494. How long is it since you have been there? Six months.
495. Surveying some Government land? No; inspecting it.
496. Do you know the extent of Government land there now? Yes. At Harbord, at Manly, near the water reserve, at Dobroyd, at Narrabeen, and at Manly Cove, we have about 4,118 acres, which will be directly affected by the erection of this bridge. Of course, we have a large area, but I do not think the other land would be affected by this bridge.
497. That would be farther on? Yes, farther to the west, at the back of Gordon.
498. How many miles would that be? I daresay 8 or 10 miles.
499. Is population settling down very quickly in the neighbourhood of Manly, or at those other places to which you have alluded? No. Speculators are buying the land.
500. Do you think it would settle down quickly if there were a bridge? Yes; I think it would aid it very considerably.
501. Do you think it would be a great convenience to those at present residing in those districts and at Manly? I do. I think you wanted the value of this Crown land.
502. Yes? The approximate value of those lands directly affected by the bridge is about £73,980.
503. *Mr. Garrard.*] That is their present value? Yes. If the bridge is erected I think the increased value of those lands might be reasonably estimated at 25 per cent., which on £73,980 is £18,500. I have given the question a great deal of consideration, and have also taken the opinions of other people who knew what the lands were.
504. *Mr. O'Connor.*] Those lands are in the immediate vicinity of the bridge? They are in the area the bridge would influence.
505. *Chairman.*] You are well acquainted with the harbour above the site of the bridge;—is the punt there worked under your Department? No; under the Roads, I think. [*Produces Admiralty chart.*] There is a sand-bank below the Spit with about 9 feet of water at low tide. If a vessel draws more than 9 feet of water she could not cross at low tide. Of course if they make a tramway over the bridge it will add more than 25 per cent. to the value of the land.
506. We have nothing to do with the tramway, and the tramway has nothing to do with the bridge. Do you think that part of the harbour would be affected for yachting or navigation by the construction of that bridge? Not much, if they had two openings.
507. You think two openings would obviate all difficulties? I do, because there is no great depth of water. Before you reach the site of the bridge the water shallows; it is a broad sand-bank that at present impedes the navigation for deep-drawing vessels.
508. *Mr. Abbott.*] Is it not a reef? No, I do not think it is a reef; it is sand; there may be rock amongst it.
509. We were told that it was a reef? It may be a reef underneath.
510. *Chairman.*] Do you think, under the whole of the circumstances, the convenience provided by this bridge would be sufficient to justify the Government in expending £62,000 in the construction of it? Yes; I do.
511. *Mr. Abbott.*] Have you a map of the Crown lands that would be affected by the bridge? Yes. [*Vide Appendix.*]
512. These lands in Gordon would be more easily approached by roads through St. Leonards, would they not? Yes; I have not included them.
513. Have you sold any of this Narrabeen land? Yes, about 1,500 acres, at an average of about £15 per acre. We have 800 acres yet to dispose of in the same estate.

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514. In round numbers, the increased value given to this land by the construction of the bridge would bring it up to about £91,000? Yes, and my estimate is a low one; I intended it to be low.
515. At the present we could get £74,000 for those lands without the bridge? Beyond a doubt.
516. Then you add £18,000 as the increased value? Yes.
517. We have been told that the annual charge for this bridge will be £4,000 a year; do you think the increased value it would give to those lands would be a justification to place that charge on the country for all time? Yes; but not for the Crown lands alone.
518. £18,000 at 4 per cent. would be £720 a year? Quite so.
519. So that there would be £3,000 odd still a charge against the country for which there would be no return to the country? Quite so; that is putting it on mercantile grounds only.
520. Have you ever travelled to and fro between North Shore and Manly Beach as it is now? Yes.
521. Have you seen any great traffic there at any time? No; I cannot say that I have. If there were a bridge I think there would be traffic.
522. Where from? Manly Beach.
523. How many people living at Manly Beach do you estimate would have the means of driving to and from North Shore? I could not say. If it is to be taken as a paying transaction, I should say the bridge will not pay.
524. In the interests of the public is there necessity for it at the present time? There is no necessity for it; certainly not.
525. It would be a nice outlet to people who desire to go to Manly Beach, but who object to the sea? It would be more than that; I look upon it as a highway along that east coast.
526. What is the use of a highway if there are no people to use it? You cannot have the people until you make the highway; make the highway and the people will come.
527. Do you not think that a steam-punt would answer all the purposes for many a day to come? I think it would, but I think the bridge would be better.
528. Do you know anything of the service between here and North Shore? Yes.
529. That is a very heavy traffic, especially in the morning and evening? Yes.
530. Have you ever seen any inconvenience arising there? No, none at all; but I cannot dissociate from my mind that there is to be a tramway across the bridge. It has got so ingrafted in my mind that I have a difficulty in getting rid of it.
531. *Mr. Copeland.*] You stated just now that the Government sold 800 acres odd at Narrabeen, at an average of £15 per acre;—have you any reason to suppose that this land, as coloured yellow, will bring a greater average than the land at Narrabeen? That is the land I meant—Narrabeen Estate.
532. Have you included the Manly Cove in your estimate? Yes; I put that down at £8.
533. Now suppose we were to estimate the whole of this 4,118 acres to give a net return of £15 per acre, free of any further expense for clearing, forming, or metalling roads, auctioneers' commission, &c.;—would that not be a fair estimate? Yes; that would be about a fair thing.
534. You will perceive that it will just take the whole of this 4,118 acres of suburban land to provide the money to build this bridge? Quite so.
535. You say you are under the impression that the value of this land would be increased 25 per cent. if the bridge were built? Yes.
536. Have you considered how much the value would be increased if a steam-punt were provided instead of a bridge? Nothing.
537. All the improvement would take place only if the bridge were built? Yes; I think there would be no improvement unless the bridge were built.
538. I suppose you are pretty well acquainted with North Shore? Yes.
539. Have you any idea what improvement has taken place in the value of land there during the last ten or fifteen years? An enormous increase.
540. I suppose some hundreds per cent. in some cases? Yes; land which was sold at per acre is now only sold at per foot.
541. Could we not, reasoning by analogy, expect that an increase would take place in the value of these Crown lands, if we provide a similar steam-punt for the Spit? Scarcely; I do not think the analogy is complete, because at the Spit that would be the only means of traffic, whereas here they have a passenger traffic; there would be no passenger steamers at the Spit.
542. But on the other hand is not the distance shorter across the Spit than from Sydney across to North Shore? Yes.
543. Therefore, the shortness of the distance would make up for the slightly slower speed? Yes, to a small extent.
544. I suppose the people at North Shore receive as good accommodation as other people by the use of this steam ferry? Yes; I have seen many steam ferries in other countries, and I think these are quite equal to any of them.
545. If the Government were to provide an equally good steam ferry for the people at Manly, they would have no real cause of complaint? No; I do not think they would have any cause of complaint, but it would not be equal to a bridge.
546. What particular reasons have you for placing such a great value on the bridge? I cannot but feel that a tramway will go over it.
547. If the Government do not build a bridge, the tramway people may build a bridge for themselves? I do not think so; they might pay half the cost of the bridge; I believe they would.
548. Leaving out the tramway, what other special advantages would there be? There would be no transshipment.
549. Is there any transshipment when you send goods by steamer from Sydney to Manly? I mean there is a transshipment with the horse and vehicle in driving; you have to drive on to the punt, which is awkward.
550. You would have to drive on the bridge? Yes; but it is a different thing. When I said I thought the Government were justified in building the bridge, I did not mean as a commercial undertaking only.
551. *Mr. Abbott.*] There is reform now? I have seen that. I only spoke as a public officer who has seen these wants for thirty years or more.

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J. W. Deering, Esq. 6 Dec., 1888.

552. *Mr. Copeland.*] Do you think the low-level bridge can be constructed without impeding the navigation? No, it is bound to impede it to a certain extent; every low-level bridge does that; but no large vessels will ever go up above the Spit.
553. Suppose they were to strike a large supply of natural gas or kerosene shale, or anything of that kind;—can you foretell what large cities may spring into existence on the upper part of Middle Harbour? There would not be vessels of large draught at any time go above the Spit.
554. Suppose they were to strike kerosene shale? That would probably come down in punts; I do not think there will ever be a large traffic up there. Steamers could have jointed funnels, and strike them.
555. *Mr. O'Connor.*] You said you thought the people at North Shore were quite satisfied with their means of transit? Yes; I think they should be.
556. I heard you say that land had increased wonderfully in value at North Shore? Yes; beyond a doubt.
557. Do you think it would further increase if there was a bridge between Sydney and North Shore? Beyond a doubt; it would be no longer North Shore; it would then be Sydney.
558. Would the people not be much more satisfied and much better served if they had a bridge? Beyond a doubt.
559. Since you have been in the public service, do you think it has been a cardinal principle in the construction of bridges to know first whether they will pay or not? No; I do not know that that is taken into consideration at all in the case of a public bridge.
560. Do you not think it would be a rather narrow policy merely to ask whether this bridge would benefit the people in the main street of Manly? Yes; I do.
561. You consider if the bridge were constructed, it would not be for the people of Manly, but for the people of the Colony? Yes; that is what I meant when I told the Chairman that I thought the Government would be justified in building it.
562. *Mr. Garrard.*] Would you be able to furnish the Committee with a tracing of that plan? Yes.
563. A large amount of Crown land has been sold recently in those districts? Yes.
564. Were the purchasers led to expect improved means of communication? Not at all; not by the Crown auctioneers.
565. You have been present at each of these sales? I was present at the chief sales, and nothing was said about the bridge; we carefully avoided it.
566. *Mr. Suttor.*] Within what distance from the bridge are most of these lands? They vary from 2 miles to 6 and 7 miles.
567. Do you think they would increase in value if the bridge were not erected? No; they have been at a standstill for some time; there would only be a very moderate increase.
568. You think a large population would settle down if these lands were opened up by the bridge? Yes.
569. What would be the inducement? To make homes. There is very good land in that locality that would make very comfortable and cheerful homes for the people.
570. Land that could be cultivated? Yes; some of the richest in the Colony—black sand soil.
571. *Mr. Copeland.*] Where is that soil? There is some on the northern part of Harbord; down in the low places there is beautiful soil.
572. *Mr. Suttor.*] Are there many people living out there now? Not very many; perhaps 200.

John Joseph Chounding, Esq., Traffic Manager, Port Jackson Steamship Co., sworn and examined:—

J. J. Chounding, Esq. 6 Dec., 1888.

573. *Chairman.*] You are the traffic manager of the Port Jackson Steamship Co.? Yes.
574. Where do your boats run to? To and from Manly, and other places where we can get a charter for them.
575. Have you many boats running? We have three boats constantly running to Manly—the "Brighton," the "Fairlight," and the "Narrabeen."
576. Have you much goods traffic? Yes; a fair share.
577. What is your charge per ton? Four shillings per ton.
578. You do not make distinctions between one class of goods and another? No; unless it is a small lot of goods, such as parcels, when we charge 1s. or 6d. each. Anything over a ton we charge at the rate of 4s. per ton.
579. Are there great quantities of goods going backwards and forwards? We have not had so much this year; nearly all the building has stopped for the time.
580. You take building material? Yes.
581. And necessaries of life—such as groceries, &c.? Yes.
582. Most people get their supplies from Sydney? Most of them.
583. Are there any industries down there that send goods or produce to Sydney? No; except that the Chinamen have one or two gardens and bring a little fruit.
584. Have you heard any complaints of the cost of conveying goods between Sydney and Manly? I have had no complaints made to me.
585. Do you know the site of the proposed bridge across the harbour at the Spit? Yes; I have been there pretty often.
586. Are you given to yachting at all? No; but I take a great interest in it.
587. Do you think that commerce or the pleasure of the people would be interfered with materially by the construction of a low-level bridge at the Spit? It would interfere with the yachting.
588. It is proposed to have two swings? Yes; but I fancy there would be a little delay in boats getting through. I know we have a little delay in getting through the Pyrmont Bridge, and that is worked on a very large scale.
589. Do you think the delay would be greater than is caused by going across by the present means of transit? You know our boats are increasing in number every week. I have seen nine or ten yachts at a stretch going up Middle Harbour, and they could not all get through at once.
590. Do you think the erection of the bridge would be a matter of great convenience to the people living on the other side of the harbour? I think it would be.
591. You think it would be largely used for traffic purposes? Yes; I fancy it would increase our own trade; people would go down by the road and come back by steamer if there were conveyances running to carry them.
592. You think it would largely increase the population? Yes. 593.

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J. J. Chounding, Esq. 6 Dec., 1888.

593. Are you aware that the Government have a large quantity of land over there? No; I did not know.
594. Supposing there were four or five thousand acres of Government land there, do you think that would warrant the Government in erecting a bridge in connecting one side with the other? I would not like to say.
595. *Mr. Copeland.*] What is the time usually occupied by your steamers in making the journey from Sydney to Manly? Forty minutes we allow, but we can do it in 35 when clean.
596. If the bridge were constructed, do you think the journey could be done quicker than that by land? No; I do not think so.
597. You do not think there would be any saving of time in travelling overland instead of by steamer? No; I have ridden around very often. I have started on a pretty good horse when the boat started, and she has always beaten me. Of course there was the delay at the Spit.
598. It has been stated here that a considerable amount of furniture is carried to and fro. Supposing the bridge were constructed, do you think people would be likely to carry their furniture overland instead of by your steamers? That I cannot say. I know that some of the gentlemen living down there prefer to take it overland, because it does not get knocked about; it is put on the cart and not taken off till it arrives at the house it is going to. If it is taken from the cart into the steamer, then from the steamer to the wharf, and then put on the cart again, it is shifted four times. I believe I myself would take it right round.
599. Does it often happen that your steamers are not able to make the journey through stress of weather? No.
600. Has it happened since you got these large vessels? No; our boats could go through any weather. We have never had to take a boat off on account of the bad weather since we have had the class of steamers that are now running.
601. As a matter of fact you run as regularly as the railway? Just so.
602. And with the same amount of safety? Yes.
603. *Mr. Humphery.*] Do you issue season tickets? Yes.
604. How much do you charge for them? £8 a year.
605. What would that be for a single trip? About 4d., I think, if you go once each way every day; but then if you have a family of eight it would only be about £1 a year for the youngest in the family—the larger the family the smaller the rate.
606. The head of the family would pay £8? Yes; then the next £6, then £5, £4, and down to £1 1s. 10d.
607. Do you think it probable that a tramway would carry passengers at a less fare than that? I do not know.
608. What would be the distance by tram? I could not tell. We reckon it 7 miles by water.
609. *Mr. Watson.*] Are your present rates remunerative to the company,—do you pay a fair dividend? No.
610. How long is it since you paid a dividend? We paid a dividend last year of 6 per cent. per annum, but then we had not paid one for eighteen months before.
611. As a matter of fact, the fares do not pay the company? I would like to see it a great deal better.
612. *Mr. Garrard.*] What height would the bridge require to be for your steamers to go under? About 50 feet. Our steamers are about 42 or 43 feet, I think.
613. Your boats never go up Middle Harbour? Yes; I have been up there several times in the "Fairlight," on moonlight nights, with the Austrian band and the Liedertafel.
614. The ordinary traffic is conducted by smaller steamers than any of yours? Yes.
615. And if the bridge had a headway of 30 feet, it would accommodate the ordinary traffic without opening the swing? I do not think it would, because our passenger boats very often go there. The "Narrabeen" was up Middle Harbour the other day with a picnic, and she is 36 feet.
616. But the usual traffic is carried on with smaller boats? Yes.
617. If there were swings worked with modern appliances it would be no very great hindrance to traffic? No; I do not think so.
618. Do you think there is likely to be a large amount of activity on the shores of Middle Harbour at any time, or do you think it will be confined to residential sites? That I could not say.
619. Is it true that the shores of Middle Harbour come down rather precipitously to the water; that there is not much level land between the water and the hills? I think it is.
620. Are you aware of the depth of water in the shallowest part of Middle Harbour? No; we always keep in mid-channel.
621. Your boats have very shallow draught? No, 7 or 8 feet; but our instructions to our masters always are to keep to mid-channel.
622. You have had no difficulties in going up with your boats? No.
623. *Mr. Suttor.*] Is there much passenger traffic between Manly and Sydney? Yes.
624. What is the average number of passengers every day? On an ordinary day we carry about 700 to 800; on Sundays and holidays of course we carry more. We have carried as many as several thousand.
625. Have you much goods traffic? We have no difficulty with goods. Years ago we had a lot of trouble, but since we have had the large boats we can take it away quicker than they can bring it down.
626. *Mr. Garrard.*] You spoke of the small dividend paid; how has your increased plant been paid for—by increased capital or out of earnings? Out of earnings.
627. There was no increase of capital to buy the "Narrabeen," for instance? No.
628. Although you have not been paying a large dividend, you have been increasing your stock? Yes.
629. *Mr. Watson.*] Is it not a fact that you have issued debentures to pay for some of these steamers? That was at the commencement of the company, some three or four years ago.

John Alexander M'Donald, Esq., Assistant Engineer, Department of Roads and Bridges, sworn and further examined:—

J. A. M'Donald, Esq. 6 Dec., 1889.

630. *Chairman.*] Your name is? John Alexander M'Donald.
631. And you are engaged in the Department of Roads and Bridges? Yes.
632. Have you had to do with the design of the proposed bridge across Middle Harbour, at the Spit? Yes, I got out the design.

633.

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J. A. M'Donald, Esq. 6 Dec., 1888.

633. Is it the case that plans have been prepared for a steam-punt? Yes, and tenders have been invited. The Commissioner for Roads has recommended a tender, and the papers are with the Works Department to deal with. The money is not yet available. An amount of £2,000 is to be put on the Estimates for 1889, and I believe the Minister has refused to sanction the expenditure until the money is available. £2,000 is the amount proposed to be voted; but the tender was below that.
634. What was the amount of the tender? It was about £1,700.
635. Then all the plans of the steam-punt are completed? Yes; the plans can be produced at any time.
636. Is it contemplated to provide by means of the steam-punt carriage of a tramway? No.
637. Only for ordinary traffic? For ordinary traffic. The punt will be similar to the one now working at Hexham, on the Hunter River.
638. Worked by steam? By steam on the punt, and a wire rope.
639. *Mr. Copeland.*] The intention of the Department is that in the event of a bridge being proposed by the Government, you will be able to take this steam ferry away to some other place? Yes. A bridge of the size that has been proposed will take at least about two years to build, and it is proposed to put a steam ferry there until the bridge is completed.
640. And then remove the ferry to some other place? Yes.
641. *Mr. Garrard.*] Can you produce the plans of the steam punt? I can produce them in two or three minutes.
642. *Chairman.*] Let us have them at our next meeting? Yes.
643. *Mr. Street.*] Can you tell us what time will be occupied in the transit across the Spit by this steam-punt? Including starting and stopping it would not exceed 5 minutes.
644. A little over 10 minutes a double trip? Yes. Of course there is the loading or bringing the waggons or carts on; that takes a little time. Generally it would be about 15 minutes from either side.
645. *Mr Garrard.*] Would it be possible to ease down the rather severe grade which at present exists leading down to the punt on both sides—there is a severe grade about 40 feet above high-water mark? Yes; that has been left with a view to putting the bridge in. If a steam-punt were decided upon the grade could be eased down.

FRIDAY, 7 DECEMBER, 1888.

Present:—

The Honorable JOHN LACKEY (CHAIRMAN).

The Hon. GEORGE CAMPBELL.	JACOB GARRARD, Esq.
The Hon. WILLIAM HENRY SUTTOR.	ALEXANDER KETHEL, Esq.
The Hon. JAMES WATSON.	SYDNEY SMITH, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	THOMAS MICHAEL SLATTERY, Esq.
JOSEPH PALMER ABBOTT, Esq.	JOHN RENDELL STREET, Esq.
HENRY COPELAND, Esq.	DANIEL O'CONNOR, Esq.

The Committee further considered the proposed bridge at The Spit, Middle Harbour.

John Alexander M'Donald, Esq., Assistant Engineer, Department of Roads and Bridges, sworn and further examined:—

J. A. M'Donald, Esq. 7 Dec., 1888.

646. *Chairman.*] Have you prepared the plans now produced with reference to the proposed steam-punt over the Spit at Middle Harbour? Yes. There is one point upon which I should like to correct the evidence that I gave yesterday with regard to the lowest tender for the work. The amount was £1,487 9s.
647. Were there many tenders? There were three. There is another point which has been raised by the Committee; that is, as to how many vehicles the punt will carry on one trip. It will carry eight ordinary sized buggies at one trip.
648. How long would the trip occupy? About 5 minutes, but the trips would be at intervals of about 15 minutes.
649. The vehicles I suppose would be simply driven on to the punt? Yes.
650. And I suppose as many people could be conveyed as the buggies would hold? Yes; there would be room for passengers, in addition, on the side walks.
651. On the whole you think that the punt would be sufficient to meet the requirements of the traffic for a time? Certainly; and when the traffic increased beyond what the punt would carry, the simplest plan would be to provide a duplicate punt to run at intermediate intervals.
652. Suppose a private company were empowered to construct a punt for tramway purposes, would that interfere with the Government punt? The company would have to run their tramways at the crossing entirely on Government reserves.
653. But I mean as far as the working of the punt is concerned? The road is rather narrow there, and it would be very difficult to get an approach independent of the Government approach.
654. Do you think it would be possible to make the Government punt available for carrying a tramway? I think it would be advisable to have an additional punt for the tramway.
655. What would be the extreme length of the punt available for vehicles? Fifty-five feet 3 inches by 11 feet is the available space for vehicles and horses.
656. *Mr. Abbott.*] And how many buggies would the punt hold? Eight in two lines.
657. *Chairman.*] Suppose a set of rails were put on the punt, would it carry an ordinary tram? Yes; but the tram would have to be carried in the centre, and there would be no room for the ordinary traffic.
658. That would be when the tram was crossing, but it would not cross very frequently—not more, perhaps, than two or three times a day. If that were the case would the tram interfere largely with the general traffic? Not largely, but it would be very difficult to get tramway grades from the ferry.
659. That is another matter; I am simply asking about the conveyance of the traffic from one side to the other? It would not be difficult to provide for that.
660. *Mr. Kethel.*] What dead weight will the punt carry without endangering its stability? About 20 tons.
661. *Chairman.*] Not more? It would carry more in calm weather.

662.

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J. A. M'Donald, Esq.
7 Dec., 1888.

662. It would carry an engine, I suppose, in addition; I mean its own engine? Yes.
663. Then the 20 tons you speak of would be in addition to its own working gear? Yes.
664. *Mr. Kethel.*] What is the depth of the punt from the deck to the bottom? Four feet.
665. *Mr. Garrard.*] What width is allowed for a buggy in order to have two rows on the punt? About 5 feet 3 inches.
666. *Chairman.*] What is the width of the punt? Eleven feet between the kerbs, but the hubs of the wheels would go over the kerb.
667. *Mr. Garrard.*] There would be no fear of a run-away when there were eight buggies on the punt? No; if there were eight buggies they would be pretty tightly packed.
668. And the foot passengers would be on the wings as it were? Yes.
669. *Chairman.*] Is there any platform besides the ordinary floor? Yes; there is a separate platform for passengers.
670. *Mr. Garrard.*] Is the punt to be of the same dimensions as the one at Tom Ugly's Point, George's River? It will be larger, and the machinery will be differently arranged. It is one of the latest design.
671. How many men would it take to work the punt? Two—an engineer and fireman.
672. *Chairman.*] Are there any other figures you wish to put in as an appendix to your evidence? The total amount of the estimated annual working expenses of the steam-punt has been given in evidence; I now supply the details. [*Vide Appendix* A1.] The total amouut is £800. The returns in 1889 are estimated to be £400, leaving a debit balance of £400.
673. Is the estimate based upon any calculation or record? On the working of other steam-punts.
674. How have you got at the number of passengers—from the returns of the present traffic? It is simply estimated.
675. Have you had any guide from the present traffic—the present punt is in your Department? Yes, it is leased, and the lessee pays £276 for this year. If the facilities are increased by having a steam-punt it is probable that the returns will be increased, and the lessee must make something out of the working of the present punt, so that I think it is fair to estimate £400 as the return. Other information which may be given in the appendix is with respect to the details of expenditure in connection with a bridge [*Vide Appendix* A.]; £3,604 is the amount given as the annual charge against the proposed bridge, and the details show how it is made out.
676. That is the estimate of the amount likely to be incurred in maintaining the bridge? Yes, including interest and depreciation, working expenses, painting, &c.
677. You put that statement in? Yes.
678. *Mr. Humphery.*] Is the £3,604 the debit balance after giving credit for the probable receipts from the bridge? No, that would be the gross debit charge. All the bridges are free. Of course if there were any returns from the tramway or anything else it would be credited.
679. *Mr. Suttor.*] Do you think it would be advisable to make a larger punt if it was required? The punts are made of thin plates, and they have to be docked every nine months for painting and cleaning, so that it would be better in the interests of the public to have two punts at the one ferry instead of providing a larger one.

APPENDIX.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Bridge at The Spit, Middle Harbour.

APPENDIX.

A

[To Evidence of J. A. M'Donald, Esq.]

PROPOSED BRIDGE OVER MIDDLE HARBOUR. [87/16,939]

Preliminary Estimate of Cost.

	£	£
Swing Pier—Outside cylinder, 25 ft. x 80 ft. = 143 tons at £15	2,145	
Inside cylinder, 8 ft. x 88 ft. = 55 tons at £15	825	
Machinery, hydraulic and steam, 70 tons at £32	2,240	
Concrete, 25 ft. diameter x 15 ft. = 280 cubic yards at £2 10s.	700	
Do. (25 ft. diameter — 8 ft.) x 73 ft. = 1,123 cubic yards at £2 10s.	2,807	
Total cost of swing pier		8,717
North Pier—Cylinders (2), 12 ft. diameter x 88 ft. = 143 tons at £15	2,145	
Concrete (2), 12 ft. diameter x 88 ft. = 737 cubic yards at £2 10s.	1,842	
Total cost of north pier		3,987
South Pier— Total cost of south pier		3,987
Intermediate North Pier—Cylinders (2), 6 ft. diameter x 88 ft. x ¼ ton per foot = 88 tons at £15	1,320	
Concrete (2), 27 square feet area x 88 ft. = 176 cubic yards at £2 10s.	440	
Total cost of intermediate north pier		1,760
Intermediate South Pier— Total cost of intermediate south pier		1,760
Cross girders in main and swing spans, 66 at 3 tons each = 198 tons at £22	4,356	
Longitudinal girders, 9 girders, each 650 ft. x 50 lb. = 130 tons at £22	2,860	
Buckled plates (650 ft. x 32 ft. x 165 ft.) ÷ 16 = 100 tons at £22	2,200	
Bulb T iron, 163 ft. x 32 x 16 lb. = 40 tons at £22	880	
Road metal, 20,800 sq. ft. at 100 lb. = 600 cubic yards at £1 10s.	900	
Total cost of deck		11,196
Main girders, 4 spans, each 126 ft. x 1¼ tons per foot = 625 tons at £22		13,750
Swing spans, 150 at ¾ ton per foot = 113 tons at £22		2,475
Abutments (2), sandstone masonry, each £1,350		2,700
Approaches, Embankment on Spit, 40 ft. on top, slope 1 to 1, 27 chains, 28 ft. high = 125,658 cub. yds. at 2s.		12,565
Total cost of bridge		£62,897

(Headway, 28 ft.; roadway, 32 ft.)

Extra Cost of Widening proposed Bridge 10 ft.

Cross girders, 327 tons at £22	£7,200
Longl. girders, 167 „ at £22	3,677
Buckled plates, 128 „ at £22	2,838
Bulb T irons, 51 „ at £22	1,122
Road metal, 771 cubic yards at £1 10s.	1,157
Total cost of deck	£15,994
Main girders and swing girders, 976 tons at £22	£21,472
Swing pier	11,208
North and south piers	10,254
Intermediate piers	4,526
Abutment	3,471
Approach in timber	17,357
	£84,282
Less Estimate 87/16939	62,897
Additional amount for 10 ft. extra width	£21,385

Extra Cost for Alterations in Original Design.

Estimated cost as per paper 87/16939	£62,897
Additional cost for timber in place of earthwork approaches	935
Additional if raised 2 ft.	800
Total	£64,632
NOTE.—The above does not include footways at £1,430 each side, or a total of	2,860
	£67,492

COMPUTATION

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COMPUTATION of Annual Charges on proposed Design, with interest at 4 per cent. :—

Taking estimated cost as follows :—Main bridge, £50,332 ; timber approach, £13,500.

	Annual cost. £	£
Interest and depreciation on £50,332 at 4 per cent. compound interest, and life taken at 150 years, equivalent to 4·01 per cent. per annum	2,018	
Painting every three years at 25s. per foot	285	
Wear and tear on machinery, 2 per cent. on £2,240	45	
Oil, stores, &c.	25	
Wages—one engineer and one labourer	288	
Total main bridge		2,661
Interest and depreciation on £10,000 at 4 per cent. compound interest, and life taken at 30 years, equivalent to 5·78 per cent.	578	
Interest and depreciation on £3,500 at 4 per cent. compound interest, and life taken at 15 years, equivalent to 9 per cent.	315	
Painting, &c.	50	
Total approach		943
Total		£3,604

COMPUTATION of Annual Charges if Iron Approaches be adopted in place of Timber on proposed Design :—

With main bridge, £50,332 ; and iron approach, £45,000 ; interest at 4 per cent.

	Annual cost. £	£
Main bridge, as before, at 4·01 per cent., &c.	2,661	
Interest and depreciation on £45,000 at 4 per cent. compound interest, and life taken at 150 years, equivalent to 4·01 per cent.	1,800	
Painting, &c.	228	
Total		4,689

Note.—The above calculations of interest and depreciation are based on the principle of annuities, and are worked out from the formula.

$$P = \frac{1-(1+r)^{-n}}{r} A$$

which gives the amount of equal annual payments required to pay off both principal and interest in n years. This annual amount is then worked out as a percentage on the prime cost.

With the iron and steel structure, the life has been assumed to be 150 years. With the timber structure the life of the deck has been assumed to be 15 years, and the life of the rest of the timber work has been assumed to be 30 years.

SUMMARY, with loan at 4 per cent. interest ; showing difference in annual charge between iron and timber approaches.

The annual charge with iron and steel main bridge and iron approaches, headway 28 feet, and roadway throughout 32 feet, would be	£4,689
Equivalent to 4·92 per cent. on £95,332.	
The annual charge with iron and steel main bridge and timber approaches, headway 28 feet, and roadway throughout 32 feet, would be	3,604
Equivalent to 5·57 per cent. on £63,832.	
Balance in favour of timber approaches	1,085

JOHN A. M'DONALD, M.I.C.E., M.I.M.E.
Assistant Engineer of Roads.

A1.

STEAM PUNT, MIDDLE HARBOUR.

Estimated annual working expenses ; taking life of punt at 21 years, and working with one shift only of men :—	£
Annual cost for repairs, stores, painting, &c. (wear and tear)	320
Depreciation (say) 7 per cent. on £2,000 (life 21 years)	140
Coal account	52
Labour	288
Total annual cost	£800
Estimated returns in 1889	400
Debit balance	£400

Taking life of punt at 10 years, and working with two shifts of men.

Annual cost for repairs, stores, painting, &c. (wear and tear)	320
Depreciation (say) 11 per cent. on £2,000 (life 10 years)	220
Coal account	75
Labour	576
Total annual cost	£1,191
Estimated returns in 1889	400
Debit balance	£791

JOHN A. M'DONALD,
Assistant Engineer.

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B.

[To Evidence of J. W. Deering, Esq.]

ESTIMATED Value of Crown Lands affected by proposed construction of Bridge at the Spit, Middle Harbour.

On Plan.		Acres.	Per acre.	Total Value.
1	Harbord	270	£40	£10,800
2	Manly, near the Water Reserve	590	£50	29,500
3	Dobroyd (55 lots)	28	£80 = 10/- p. ft.	2,240
4	Narrabeen	800	£15 av.	12,000
5	Manly Cove	2,430	£8 av.	19,440
	Total	4,118		£73,980

If the Bridge is erected, I think that the increased value of the above lands may reasonably be estimated at 25 per cent., which on £73,980 is equal to £18,500.

JOHN W. DEERING,
Metrop. and Coast Dist. Sur.

6th Dec., 1888.—No. 3,372.

[4 plans and sketch.]

Sydney: Charles Potter, Government Printer.—1889.

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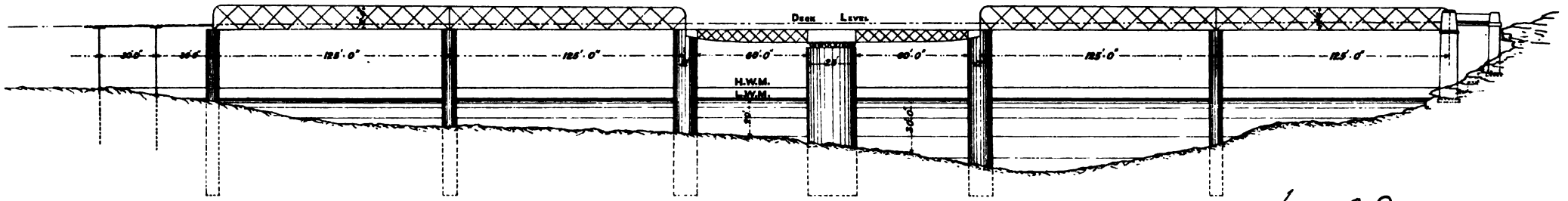
Proposed Bridge at Spit Middle Harbor

Main Bridge only

Natural Scale 40 Ft. = 1 Inch

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.



Alexander Kirkwood - M.I.C.E., M.I.M.E.
Assistant Engineer in Charge

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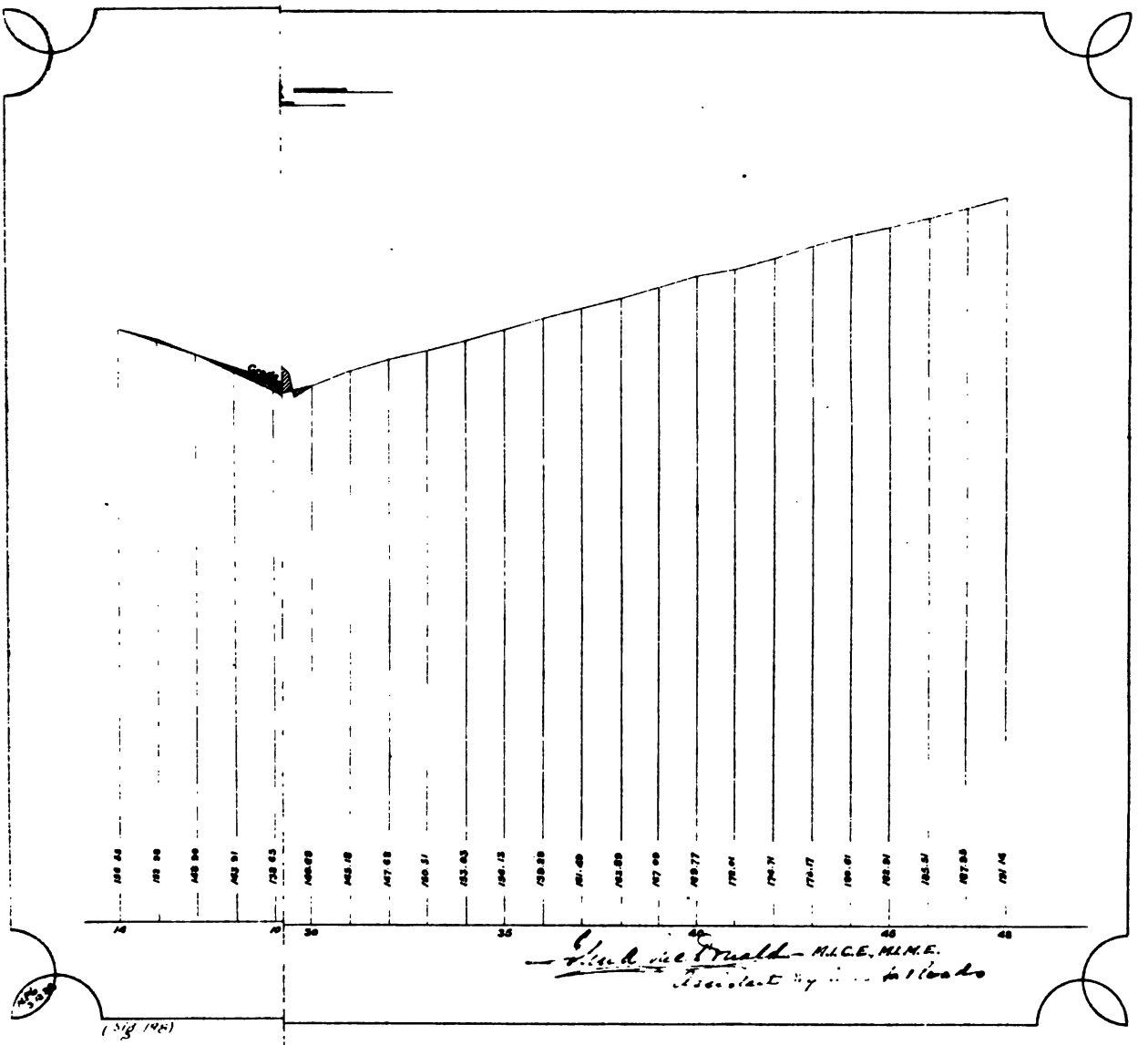

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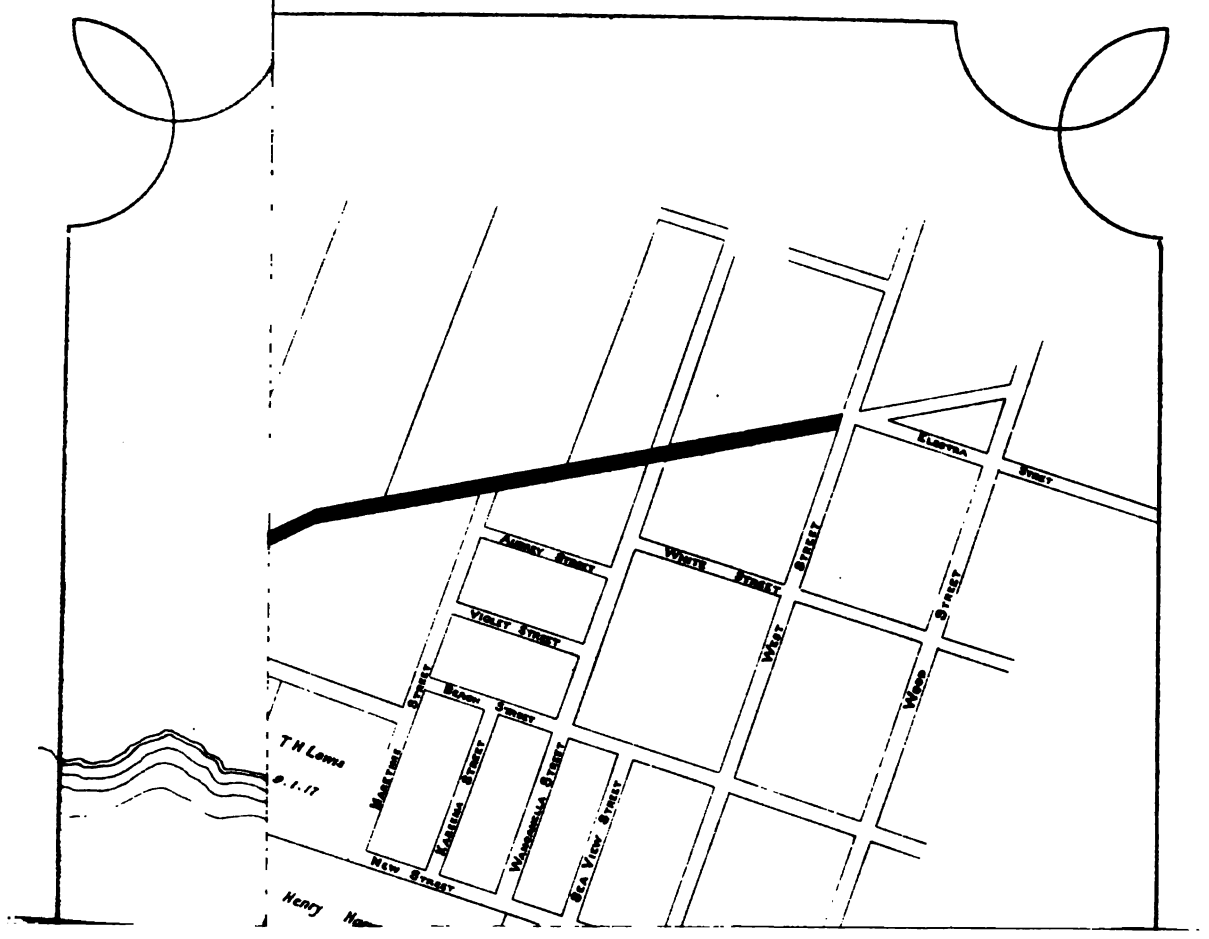

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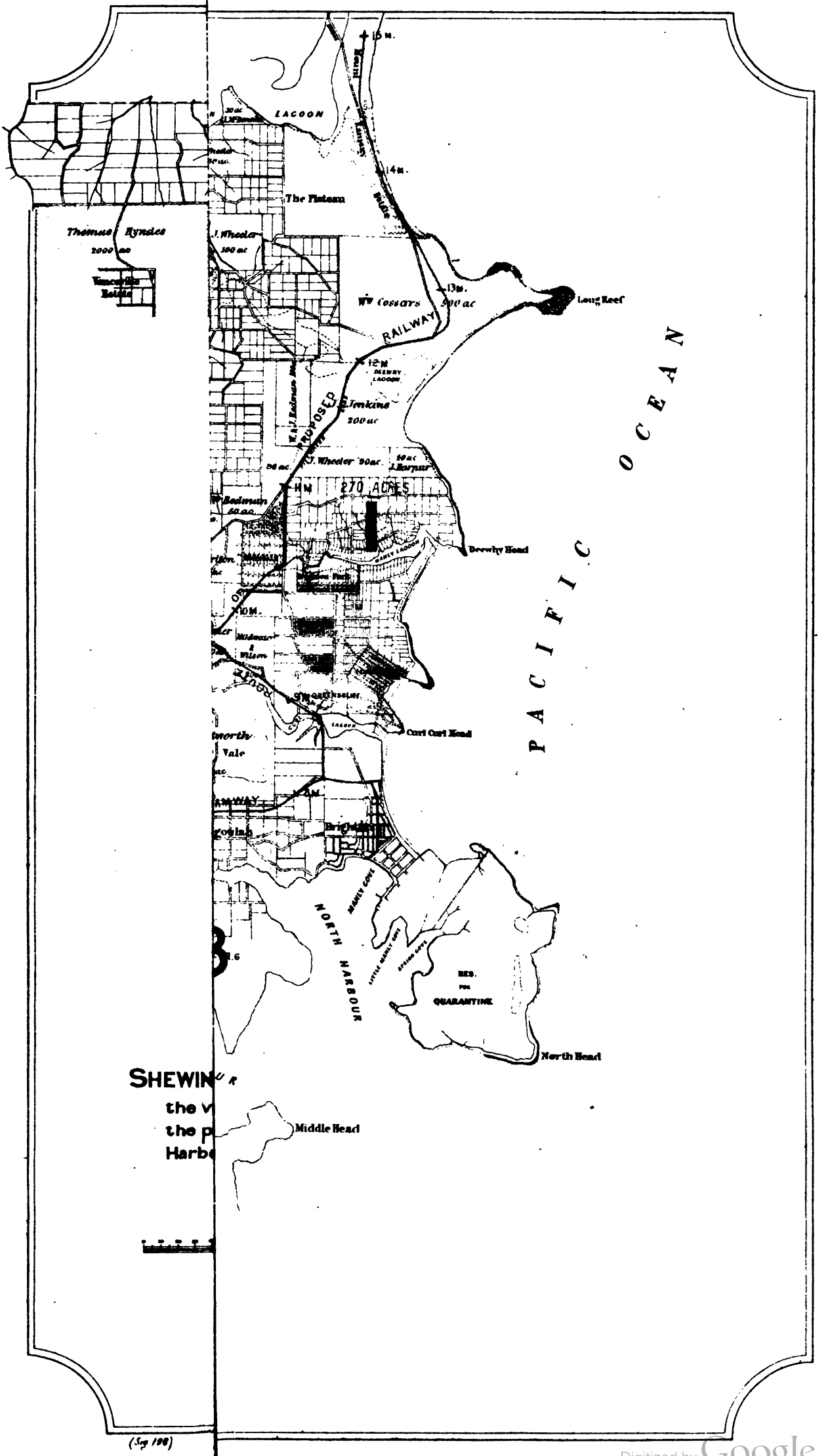

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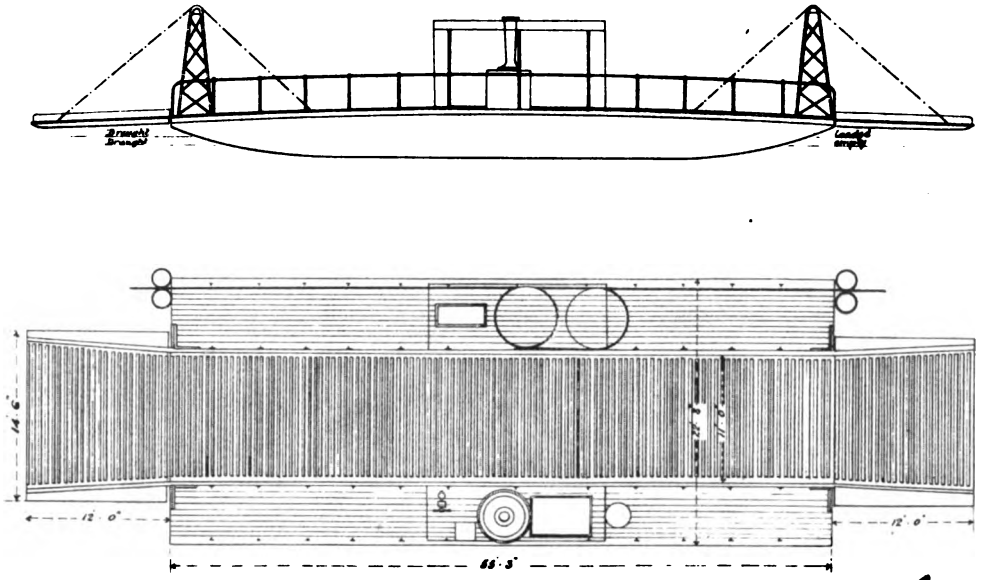
MIDDLE HARBOR FERRY

PROPOSED STEAM PUNT.

½ SCALE



John A. Macdonald M.I.C.E., M.I.M.E.
Consil. Engr. to Roads

(Sig 198-)

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1890.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLAN,

RELATING TO THE

PROPOSED BRIDGE OVER TARBAN CREEK, PARRAMATTA RIVER.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37, section 8.

SYDNEY CHARLES POTTER, GOVERNMENT PRINTER.

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MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable JOHN LACKEY, Vice-Chairman.
The Honorable ANDREW GARRAN.
The Honorable FREDERICK THOMAS HUMPHERY.
The Honorable WILLIAM JOSEPH TRICKETT.
The Honorable GEORGE HENRY COX.

LEGISLATIVE ASSEMBLY.

JOSEPH PALMER ABBOTT, Esquire, Chairman.
JACOB GARRARD, Esquire.
HENRY COPELAND, Esquire.
JAMES EBENEZER TONKIN, Esquire.
WILLIAM SPRINGTHORPE DOWEL, Esquire.
EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN HURLEY, Esquire.
CHARLES ALFRED LEE, Esquire.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

BRIDGE OVER TARBAN CREEK, PARRAMATTA RIVER.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the first Session of the present Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, and the Public Works Act Amendment Act of 1889, 52 Vic., No. 26, to whom was referred the duty of considering and reporting upon the "expediency of erecting a bridge over Tarban Creek, Parramatta River," have, after due inquiry, resolved that it is not expedient the bridge should be erected; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the proposed bridge.

1. No plan of this proposed bridge has been submitted to the Committee, and no definite description of the bridge has been put before them. A few words of description will, however, be found in a *précis* of the proceedings relating to the proposal for the bridge; and from these it will be seen that the intention has been that the bridge should "either be an arch, in steel, of 370 feet span, with steel approaches, or iron lattice bridge, 600 feet long, on iron piers," and that "until borings are taken, the most economical of the two designs cannot be ascertained." It is also stated by the Engineer for Bridges, in his evidence, that it was proposed to use iron piers and a composite structure at one site, and a timber bridge higher up the creek. The object in erecting the bridge is explained in an extract from a minute written by the present Minister for Works last year, to be to complete the line of communication by the shortest route between the Parramatta Iron Bridge and the Bridge over Lane Cove, giving access to the North Shore, and saving a distance of one mile and a half.

Cost of the proposed bridge.

2. The cost of the bridge, as put before the Committee, would be £26,000; but the accuracy of this estimate is very doubtful. The estimate, the Engineer for Bridges states, is not guaranteed in any way; "it is simply an idea of the probable cost."

Proposal to withdraw the bridge.

3. Immediately the inquiry respecting this bridge was opened, the Committee were met by a desire, expressed by the Under-Secretary for Public Works, on behalf of the Minister for Public Works, that the proposal should be withdrawn, on the ground that a bridge could be constructed for a sum under £20,000; and that, therefore, it was not necessary, under the Public Works Act, for the proposal to construct the bridge to be inquired into by the Committee. It was considered, however, that, as the matter had been referred to the Committee by the Legislative Assembly for inquiry and report, the inquiry must proceed, and the request that the proposal for the bridge be withdrawn could not therefore be acceded to.

Evidence of officers of Roads and Bridges Department against the bridge.

4. The Committee then examined Mr. Robert Hickson, Commissioner and Engineer-in-Chief for Roads and Bridges, and he gave evidence to the effect that the bridge ought not to be constructed, as, in his opinion, it was not required. "Soon after I took charge of the Department," he says, "my attention was called to a sum of money being placed on the Estimates for this bridge, and I therefore visited

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visited the site. After a very careful examination of the place, I came to the conclusion that the Government would not be warranted in spending any money there at all, and I reported to the Minister accordingly." Evidence from the Engineer for Bridges and from the Engineer for Roads is also to the effect that the bridge is not required. This opinion on the part of the responsible officers of the Department of Roads and Bridges, it will be observed, is a contradiction, first to the information which led the Minister for Works to cause the Legislative Assembly to refer the bridge to the Committee for inquiry; and secondly, to the idea on the part of the Minister, as expressed in his desire to withdraw the proposal, that a bridge should be erected at a cost less than £20,000. The peculiar position in which, by the evidence of the officers of the Department of Roads and Bridges, the Minister was placed, was subsequently explained in a letter to the Committee from the Under Secretary for Public Works, in which it was pointed out that the evidence upon which the Minister determined to submit the proposal to Parliament was that of the late Commissioner for Roads, who was then the official adviser of the Government on such matters. "As, however," the letter proceeded, "the Minister finds that the present Commissioner holds opinions differing from those of his predecessor, he is desirous of reviewing the matter, not only from the standpoint of cost, but also from the more radical one of necessity," and on this further ground it was requested that the proposal be negatived.

Visit of the Committee to the site of the bridge.

5. The Committee, in view of the nature of the information before them, decided to visit the site of the proposed bridge and make themselves personally acquainted with the locality; and on Wednesday, 5 March, the visit was made. Accompanied by the Commissioner and Engineer-in-Chief for Roads and Bridges, they proceeded by vehicle to Tarban Creek, and inspected the site for the bridge and the surrounding locality, inquiring, at the same time, respecting the facilities for travelling afforded by the roads in the district.

Evidence in favour of the bridge.

6. The only witnesses who have come before the Committee to give evidence in favour of the proposed bridge are three:—Mr. C. E. Jeanneret, Mayor, and Mr. A. Tornaghi, resident, of Hunter's Hill; and Mr. Frank Farnell, M.P., one of the Members for the District. Mr. Jeanneret considers the bridge would be of very great benefit to the municipality of Hunter's Hill, and to the municipalities on the North Shore, a saving of distance in getting to Hunter's Hill being effected to the extent of a mile and a quarter, and that it would also benefit adjacent Government lands; but the evidence which he gives in support of his advocacy of the bridge is very weak. He admits that the bridge is not required as a means for enabling the residents of Hunter's Hill to get to Sydney by road; that it would not be used by them in preference to the steamers if it were constructed; and that they have not agitated for it in any way; but he considers it would be of service to persons "who like to drive about and see the country," or who may convey goods of one kind or another by vehicle to Hunter's Hill, and he thinks it should be erected if only because Hunter's Hill has not hitherto had the advantage of Government expenditure. Another reason put forward by him in favour of the construction of the bridge is, that the district has a distinct claim upon the Government in connection with the proceeds of the sale of the Field of Mars Common, that common having been given up to the Government, he contends, on condition that the proceeds were to be kept as a separate account and appropriated for local works. Mr. Farnell advocates the construction of the bridge in the interests of the general public, and states that an informal promise that the bridge should be erected was made by his late father when Minister for Lands; but he does not consider the work to be of a pressing nature. Mr. Tornaghi also speaks of a promise in connection with the sale of land at the Field of Mars Common, and states that he was a large purchaser because of his understanding that there was to be a bridge and a tramway constructed.

The Field of Mars Common in its relation to the bridge.

7. From the nature of the evidence given by the three local witnesses, as well as of that from the officers of the Department of Roads and Bridges, it became clearly apparent that the only reason of any weight put forward in support of the proposal for the construction of the bridge was that represented in the assertion that the bridge had been promised in connection with the sale of land at the Field of Mars Common; and it thus became necessary for the Committee to ascertain definitely whether such a promise had been made. This they did by an examination

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examination of the "Field of Mars Common Resumption Act of 1874," and by obtaining evidence from certain persons specially acquainted with matters relating to the Field of Mars Common. An examination of the Act showed that it contains a provision for defraying, out of the proceeds of the sale of the land, the cost of a bridge suitable for general traffic across the Parramatta River, which bridge has since the passing of the Act been erected; but it contains no reference to any other bridge. That being so, evidence was obtained from the auctioneer who sold the land at the Field of Mars Common, from the officer of the Lands Department who, in his official capacity, attended the sales, and from the Consulting Accountant at the Treasury, who is specially acquainted with the manner of dealing with the proceeds from the sale of the land at the Field of Mars Common; and the statements made by those witnesses are conclusively to the effect that no promise respecting a bridge over Tarban Creek was ever made. A promise was made at one of the sales that a tramway should be constructed, and this was afterwards repeated in Parliament; but with the exception of the bridge mentioned in the Field of Mars Common Resumption Act, which has been erected, there is nothing, so far as the Committee can ascertain, to indicate any intention on the part of any Government to provide bridge communication in connection with the Field of Mars. It is also shown by the evidence of the Treasury officer that no separate account of the money derived from the sale of land at the Field of Mars Common has been kept at the Treasury, and that it has been carried to the General Revenue Account, under the heading of Auction Sales of Crown Lands.

Decision of the Committee.

8. The Committee, therefore, have no difficulty in coming to the conclusion that the bridge ought not to be erected. They arrived at a decision in the matter on Tuesday, 18 March, 1890, on which date the following resolution, moved by Mr. Hurley, and seconded by Mr. Humphery, was passed:—

> "That, in the opinion of the Committee, it is not expedient the proposed Bridge over Tarban Creek, Parramatta River, as referred to the Committee by the Legislative Assembly, be carried out."

J. P. ABBOTT,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 15 April, 1890.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

BRIDGE OVER TARBAN CREEK, PARRAMATTA RIVER.

WEDNESDAY, 12 *FEBRUARY*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. John Lackey.	Henry Copeland, Esq.
The Hon. Andrew Garran.	James Ebenezer Tonkin, Esq.
The Hon. Frederick Thomas Humphery.	William Springthorpe Dowel, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.
Jacob Garrard, Esq.	Charles Alfred Lee, Esq.

The Committee proceeded to consider the proposed Bridge over Tarban Creek, Parramatta River.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 12 Feb., 1890.

1. *Chairman.*] You are the Under Secretary in the Department of Public Works? Yes.
2. Can you give the Committee any information about this proposal to construct a bridge over the Tarban Creek, Parramatta River? I have to ask, with the permission of the Committee, that I may be allowed to make a short statement with regard to the whole of the bridges before the Committee.
3. You may make a statement, but we will have to have an inquiry about each one of them? Quite so. But if you will permit me to make a statement it will open up a new line of inquiry with regard to each of the bridges. There are four bridges now before this Committee, viz., a bridge over Tarban Creek, Parramatta River, a bridge over the Hunter River at Jerry's Plains, a bridge to connect Bullock Island with the mainland at Newcastle, and a bridge over the Lachlan River at Cowra; and I am to ask that the Committee will have the goodness to negative the first three proposals—that is to say, for the bridge over the Tarban Creek, Parramatta River, the bridge over the Hunter River at Jerry's Plains, and the bridge to connect Bullock Island with the mainland at Newcastle. I wish to explain shortly why it is I ask this, and I also have to bring under the Committee's notice the fact that with regard to the last bridge named—the bridge over the Lachlan River at Cowra—the Committee will be asked to consider a modified plan—a plan different from what was intended when the proposal to construct a bridge was submitted to the Committee by Parliament. The reason why I am asking that the first three proposals for bridges over the Tarban Creek, Parramatta River, the Hunter River at Jerry's Plains, and from Bullock Island to the mainland at Newcastle—should be negatived, is that each one of these bridges can be built at a cost of less than £20,000, and therefore it is not necessary to refer them to the Public Works Committee under the Act. Shortly after Mr. Bruce Smith took office, estimates for three bridges were brought under his notice. The first was a bridge at Narrandera, estimated to cost £17,280, the second was a bridge over the Darling River at Wentworth, estimated to cost £26,248, and the third was for a bridge at Cowra, estimated then to cost £69,971, or a total sum of £113,499. When these estimates came before Mr. Bruce Smith he was struck with their magnitude in comparison with what he thought were the justifiable requirements of each case, and he was the more inclined to question them because he was aware that even in the old country, centres of population were continually changing so that what at one time was a populous place became, owing to change of circumstances, almost untenanted. This was specially shown to be the case in the history of England, where many old boroughs, which were once populous towns, became, after the lapse of years, reduced to very small numbers. Applying this principle to this new country, where of course the chances of change are very much greater than in old countries, and looking well ahead, Mr. Bruce Smith felt perfectly certain that no one could foretell what would be the requirements of places in this new country fifty years hence; the roads would probably have to be changed, and all requirements incidental to population would be completely altered, and he thought therefore that it would be most desirable to build bridges as cheaply as possible so as to meet the immediate requirements of each case; and therefore when these estimates came before him he directed that the whole question should be remitted to the Roads Department with the view of ascertaining whether wooden structures would or would not answer all necessary requirements, more especially as he was aware that we have the finest timber in the world. I think I may refer to the Hon. the President of this Committee in verification of what I say, because one of these bridges—the Wentworth Bridge—affected his constituency, and he expressed his very strong approbation of the steps the Minister was taking in reviewing the whole question of our bridge construction. The Roads Department, of course, at once took up the lead of the Minister, and as a first result of this revision, the Narrandera Bridge, which was estimated to cost £17,280, was let for £3,555 13s. 1d.; that is, a timber bridge was substituted for the iron one at first,

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J. Barling, Esq. 12 Feb., 1890.

first proposed, and it was pointed out, and is very clearly proved I think, that this much smaller expenditure has answered all the requirements of the case. Then, with regard to the Wentworth Bridge, it was found that, by substituting timber, the estimated cost could be reduced from £26,248 to £12,000. The actual cost I cannot tell at present because tenders have not yet been invited, but the relative cost will remain the same. Supposing the timber bridge be found to cost more than the £12,000, from having to go deeper for the foundation, the cost of an iron bridge would be increased in the same proportion. The fact remains that a very large saving is effected by substituting timber for iron. I may also remark that in many cases it can be shown that the accumulated interest on the difference between the cost of timber bridges and iron bridges would be sufficient to renew the timber structures for periods varying from ten to fifteen years. So everything shows most conclusively that the action the Minister has taken has resulted in a very large saving to the public purse. I have therefore, for the reasons stated, to ask that the first three proposals mentioned may be negatived, because we can construct each one of these bridges for less than £20,000—the Tarban Creek Bridge, the bridge over the Hunter River at Jerry's Plains, and the bridge to connect Bullock Island with the mainland at Newcastle.

4. Can you give us a *précis* stating the reasons for the proposal to construct a bridge over Tarban Creek? I was under the impression that the Cowra Bridge was the one under consideration to-day, consequently I have not brought any papers with regard to the other bridges. For the reasons I have stated, we have no plans to submit to the Committee with regard to those three proposed bridges.

THURSDAY, 20 *FEBRUARY*, 1890.

Present:—

The HONORABLE JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	JAMES EBENEZER TONKIN, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM SPRINGTHORPE DOWEL, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.
JACOB GARRARD, Esq.	JOHN HURLEY, Esq.
HENRY COPELAND, Esq.	CHARLES ALFRED LEE, Esq.

The Committee further considered the proposed Bridge over Tarban Creek, Parramatta River.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, sworn, and examined:—

R. Hickson, Esq. 20 Feb., 1890.

5. *Mr. Garrard.*] You know the proposal before the Committee to construct a bridge across Tarban Creek, so as to give more direct access to the metropolis from the North Shore? Yes.

6. Has the project been reported upon by yourself or by other officers of the department? It was reported upon by me.

7. What is the estimated cost of the bridge? It would cost £26,000. The project was reported upon in the first instance by my predecessor, Mr. Bennett.

8. Since then has the department reconsidered the advisability of erecting a bridge here, or has it thought that one of a less permanent character would do? Soon after I took charge of the department my attention was called to a sum of money being placed on the Estimates for this bridge, and I therefore visited the site. After a very careful examination of the place, I came to the conclusion that the Government would not be warranted in spending any money there at all, and I reported to the Minister accordingly.

9. Do I understand you to say that there is no necessity for a bridge of any kind at this place? I think there is no necessity, considering the cost.

10. And if a bridge were necessary, a less expensive one could be put up? A bridge could not be put up at the proposed site—that is, the continuation of Joubert-street—for less than £26,000, but one could be put up at the site coloured green at a cost of about £10,000.

11. That will not be so direct a route from the Parramatta Bridge to the Lane Cove Bridge? No; there will be very nearly half a mile difference between the two routes.

12. What is the distance between the Parramatta River Bridge and Joubert-street, where the Gladesville Road meets Joubert-street? The distance between those two points, if the proposed bridge were made, would be as nearly as possible half a mile—46 chains; by a bridge at the termination of Demilhaus-street it would be as nearly as possible a mile—77 chains; and by the present road it is a mile and three-quarters.

13. So that if the bridge which it is proposed to construct were constructed, it would save a mile and a quarter of travelling between Sydney and Willoughby? Yes.

14. Is there very much traffic on that road? There is a good deal of traffic across the Parramatta Bridge, but I think that I am within the mark when I say that three-fourths of it goes to Ryde; it does not come back towards Hunter's Hill.

15. Are you aware whether the people on the Field of Mars gave up their rights to a commonage on the condition that the money realized from the sale of it should be spent on bridges in the district? I do not know anything about it.

16. Do you know why this proposal has been put before the Committee? I do not.

17. And the department now wish to withdraw it, or to get the Committee to negative the work, on the ground that there is no necessity for a bridge there in the public interest? Yes.

18. *Mr. O'Sullivan.*] Of what kind of construction would the bridge be? It would be very much the same as that which we propose to put up at Cowra.

19. Composite? Yes; that would be the cheapest structure.

20. If any bridge is to be erected here you purpose erecting one higher up the creek at a lesser cost? Yes. If it is decided at any future time to erect a bridge, a cheaper structure would undoubtedly be better.

21. What kind of bridge would you erect then? A timber bridge would do. The water is shallow and the bridge need not be any great height.

22. *Dr. Garran.*] Do you know what municipalities as they now exist had a right in the Field of Mars Common? I do not.

23.

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R. Hickson, Esq.
20 Feb., 1890.

23. I suppose Hunter's Hill had? I do not know anything about the Field of Mars Common.
24. You do not know what the supposed value of the unsold part of that common is? I do not.
25. You do not know how much has been spent on existing bridges there? No.
26. There is a scheme for extending a tramway to this district;—do you know how much that would absorb of the remaining balance? I do not. I do not even know the route of the tramway.
27. Is it proposed to make either of these bridges out of the money derived from that land? I understand that that would be paid for with loan money.
28. You are not treating the work as having a claim on that land, but as one that will be paid for out of the General Loan Fund of the Colony? Yes.
29. *Mr. Copeland.*] Can you say whether there is any documentary evidence in the department as to the Government being committed to expend the money derived from the Field of Mars Common on bridges or anything else in the district? Not that I know of. There is nothing in our correspondence with regard to this bridge—I know that.
30. There is no correspondence whatever, as far as you know, which would lead one to believe that any such bargain had been made with the Field of Mars people? None that I know of.
31. You are treating this question simply on its merits? Yes.
32. And you do not think the public convenience requires this expenditure? I do not. The bridge undoubtedly would be a convenience, but it would be too dearly bought. They have got a very good road now which is only 1¼ mile longer than the road will be across this bridge, so that I don't think the department would be justified in spending £26,000 on the bridge.
33. Do you think that if Tarban Creek were situated in any of the country districts the people would be likely to make a claim for a bridge? I do not know about their making a claim, but I do not think it would be granted.
34. Can you say what money the Government have spent in maintaining this road—to what class does it belong? I could not tell you from memory; I could get you the information.
35. Would any expenditure be saved in maintenance if the bridge were constructed? No; there would be an additional expenditure for maintenance, because we would have to maintain the bridge and the approach to it on either side in addition to the present road.
36. Do you know anything about the population of North Willoughby? No; I cannot tell you what the population is.
37. I suppose you have no statistics as to the number of conveyances or people which cross the Lane Cove Bridge? No.
38. In fact you have not provided yourself with any information of the kind because the department wish to withdraw the proposal? Yes.
39. *Vice-Chairman.*] We have a minute emanating from your department withdrawing the proposed work altogether, together with two other bridges? Yes.
40. Your opinion is that the work is not of such a character as to warrant the expenditure proposed, and that if it were desirable to construct a bridge that could be done for a considerably less amount? Yes.
41. The department does not go into the policy of constructing bridges—you are simply acting under the Minister, to carry out such directions as may be given? Yes.
42. You do not consider whether the population is great or small—I suppose the Minister has to do with that? Yes.
43. Your objections in connection with this bridge apply to the two other bridges before the Committee? Yes; those at Jerry's Plains and Bullock Island. The Bullock Island bridge is not exactly on all fours with this, but I will explain that presently.
44. *Mr. Dowel.*] If your answer to the Vice-Chairman was correct, that the Minister inquires into the population of a district, and the necessity for erecting a bridge, what are your reasons for recommending that this bridge shall not be constructed? My general observation of the traffic in the district. The exact number of inhabitants in the district, and the number of people that would use the bridge, would be obtained by the Minister.
45. Have you any knowledge of the population that would be served by the construction of this bridge at Five Dock and North Willoughby? Only a general knowledge.
46. You have nothing to guide you? A general knowledge obtained by going over the district several times.
47. Are you not aware that some representations have been made to the Government for the construction of this bridge? No; I am not aware of it.
48. Did the Minister give instructions to you to withdraw the bridge? No.
49. You suggested to the Minister that it should be withdrawn because you did not think that there was sufficient traffic to warrant the expenditure? Yes.
50. Yet you say you have no knowledge of the population residing at North Willoughby or Five Dock? As I said before, I have not an exact knowledge; I have a general knowledge, and from it I came to the conclusion that there was not sufficient population to justify the expenditure of £26,000 for this bridge.
51. Does the country appear to be fairly settled? About Hunter's Hill it is; but the inhabitants there generally use the steamers. North Willoughby is sparsely populated as yet.
52. Are you aware that there is a tramway in course of construction at Five Dock that would be very much served by the erection of this bridge? No.
53. Have any borings been taken at the site of the bridge? No. When it was decided to withdraw the proposal we thought that it was not necessary to go to the expense of drawings or borings, so neither have been prepared.
54. If I understand you, the bridge has been withdrawn because from your own personal observations you do not think there is sufficient traffic for it? The Minister has withdrawn it. He had my report and other evidence.
55. Your report to him? Yes.
56. On the strength of your report he has thought fit to withdraw the proposal? He has thought fit to withdraw it, I presume, because of that report.
57. *Mr. Trickett.*] Has Colonel Wells any personal knowledge of this bridge or of the requirements of the locality? I dare say he may have. Of course he knows the district very well.
58. Had he not some project for shortening the road route? Yes; we propose to shorten the road route by Salter-street, cutting off an angle? It is a very small thing.

59.

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R. Hickson, Esq. 20 Feb., 1890.

59. Was he not to get a right-of-way through some church property? Through the Asylum grounds; we could do that if it was found necessary.
60. *Mr. Hurley.*] You wish the proposal to be withdrawn because the district is well served by good roads and by steamers? Yes. The portion of the district that this bridge would specially serve—that is, the lower end of Hunter's Hill—is well served by steamers.

John Alexander M'Donald, Esq., M.I.C.E., and M.I.M.E., Engineer for Bridges, sworn, and examined:—

J. A. M'Donald, Esq. 20 Feb., 1890.

61. *Mr. Lee.*] You know the site of the proposed bridge over Tarban Creek, Parramatta River? Yes.
62. Have you any personal knowledge of it? I have been there myself two or three times.
63. Have you prepared any drawings with reference to it? A survey and sections have been made, but the work has proceeded no further.
64. Have you been in any way instrumental in the withdrawal of this proposal? I received instructions from the Engineer-in-Chief not to proceed further, after he himself had visited the site.
65. The suggestion did not come from you that this matter should not be proceeded with? The Engineer-in-Cheif went out with me, when the survey was completed, to see the site, and he formed his own opinion on the matter.
66. Were you led to the conclusion that the proposal should be withdrawn in consequence of the bad position of the site? I have not expressed that opinion. The matter was decided by the Engineer-in-Chief.
67. Without reference to yourself? Of course he consulted with me.
68. Were borings taken? No.
69. No detailed work was done in connection with the bridge in consequence of the desire to withdraw the proposal? Yes.
70. As a matter of fact you take your instructions from the Engineer-in-Chief, and whether it is decided to go on with or to withdraw a work is a matter that does not rest with you? Yes.
71. You simply carry out your instructions? Yes.
72. *Mr. O'Sullivan.*] If the proposal was withdrawn, do you think it is likely that a wooden bridge would be constructed? That is a matter for the Engineer-in-Chief. I have received no instructions about it.
73. *Dr. Garran.*] You have not done anything in the way of preparing plans of either site? No.
74. Upon what is the calculation of expenditure based? The estimate that is given is not a guaranteed estimate in any way. It is simply an idea of the probable cost—it could not be guaranteed to the required 10 per cent.
75. What sort of bridge was it proposed to construct—one on iron piers? It was proposed to use iron piers and a composite structure at the one site, and higher up the creek to put a timber bridge.
76. With no iron in it? No iron.
77. The estimate before the Committee is only a rough estimate? Yes.

Colonel Frederick Wells, Engineer for Roads, sworn, and examined:—

Col. F. Wells. 20 Feb., 1890.

78. *Mr. Humphery.*] Can you state whether you gave any advice or made any suggestions as to the withdrawal of the proposal now before the Committee? None; I have given no authoritative advice to anyone.
79. Have you examined the proposed site of this bridge? Yes, some few years ago.
80. Do you consider a bridge there necessary? I do not think it necessary—at any rate at present; I think it would be premature.
81. Why have you arrived at that conclusion? I scarcely think that the requirements of the neighbourhood of Hunter's Hill necessitate so expensive a bridge when an alternative road could be made at a much less cost that would do away with the necessity for it, and make very little difference in the distance.
82. Will you describe the alternative road that you consider would meet the requirements of the district? The road was surveyed, and the survey could be produced. It would head Tarban Creek at low water, or, if necessary, take in some reclaimed ground—which it is quite within the province of the Government to do—and then, by an arrangement which I made with the Marist Brothers, a road could be made that would ascend and meet at the same point; that would not make five minutes difference in the distance, and the bridge over the little creek at the head of Tarban would be an insignificant affair.
83. Can you state the distance from the proposed road which you describe to the iron swing-bridge? I cannot, because I am not at present in possession of the surveys. I was quite unaware that I was to be called upon, or else I could very possibly have traced the surveys in the office.
84. Can you state approximately the cost of the road you suggest? No, I cannot. The matter was thrown over for the bridge before it came to a head. Only the survey was made.
85. Can you say about how much longer the road would be? It is almost impossible to state from this map without a survey; I do not think it would be half a mile longer.
86. Would it need any bridge at all? A small bridge over Tarban Creek.
87. At what cost? If built well in iron, possibly £1,000 at the outside for the bridge without approaches.
88. Can you point out on the map where the bridge you proposed would be constructed? If I remember rightly, the route follows a road on the western boundary of the French Mission for a short distance; it then diverges to the right, and begins to make its gradient through allotments in the street up to the line proposed for the bridge.
89. By looking at the tracing now before you can you say whether the difference in distance will be more or less than half a mile? It will be 28 chains shorter as it scales.
90. That road could be constructed at a comparatively small cost, and a bridge costing only £1,000 would be needed? I do not think the cost of the bridge would exceed £1,000.
91. Would that bridge be suitable for all traffic? For all traffic. The cost of the reclamation of the flat at the head of Tarban Creek would of course have to be added on, but it would be insignificant in comparison with the cost of the proposed bridge. A small reclamation would have to be made at the head of the creek to recover a flat that is bare at low tide, which the Government could do with advantage.
92. *Mr. Trickett.*] Do I understand you to say that you made some arrangement with the Marist Brothers for right-of-way through their property? Yes; I had a verbal arrangement with the Rev. Father of the college, and he told me that he would have no objection to the route which I proposed, as it would not interfere with their grounds.

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93. And on the score of expense and convenience, do you think that that road would answer all requirements for some time to come? I think it would. Col. F. Wells. 20 Feb., 1890.
94. *Mr. O'Sullivan.*] Do you know if there is much traffic on the Lane Cove Bridge? Not very much traffic—there is a fair amount.
95. There is not a very great settlement in North Willoughby to which this bridge gives access? There is not much traffic. There is settlement on the Lane Cove Road to which the bridge gives access.
96. Is that a favourite drive for people on a Sunday afternoon or a holiday? It is; but it is not crowded. I frequently drive along there myself.
97. *Mr. Dowel.*] You have visited the site coloured red? Yes.
98. You know the locality well? I know the whole of the bay from that side to the head.
99. And to Willoughby? Yes.
100. Can you inform the Committee as to the character of the country? Well, it is the usual North Shore country—barren, but capable of being made into good garden ground.
101. Is it suitable for buildings? Yes.
102. Is it pretty fairly settled upon at the present time? Not thickly.
103. Would the construction of a bridge have any effect in causing settlement there? I doubt it.
104. Can you inform the Committee at whose instance the first proposal to construct this bridge was made? I think it was by the Members and Mayor and Council of Hunter's Hill; they brought it forward and advocated it very strongly.
105. Did they receive a promise that a bridge should be constructed? I do not know. I know nothing further than that I examined the line which I mentioned for a road to avoid the large detour by the asylum.
106. *Mr. Hurley.*] Having in view the probability of a Local Government Bill being passed, do you not think that the construction of such bridges should be paid for by local taxation? I think they are too heavy in cost for local taxation, though I have no doubt that municipalities would be more careful about asking for bridges if they knew that if built they would have to pay interest on them.
107. The construction of such a bridge would not benefit a large number of the general public, would it? No, not beyond the road as a drive.

TUESDAY, 25 FEBRUARY, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman.)

The Hon. John Lackey.	Jacob Garrard, Esq.
The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	John Hurley, Esq.

The Committee further considered the proposed Bridge over Tarban Creek, Parramatta River.

John Williams Deering, Esq., Metropolitan and Coast District Surveyor, sworn, and examined:—

108. *Mr. Trickett.*] What position do you occupy in the Government service? I am Metropolitan and Coast District Surveyor. J. W. Deering, Esq. 25 Feb., 1890.
109. How long have you been in the Department of Lands? I have been in the Government service for thirty years. I first joined the Railway Department.
110 Have you had much to do with the sale of Crown lands? Yes; with the surveys and the preparing of public lands for sale.
111. Do you know a property on the Parramatta River called the Field of Mars? Yes; well.
112. You are aware, I suppose, of the circumstances connected with the sale of that property? Yes.
113. The Field of Mars Common Resumption Act was passed in 1874, was it not? Yes.
114. That Act provides "that the proceeds of the sale of the lands may be devoted towards defraying the cost of a bridge suitable for general traffic intended to be constructed by the Governor, with the advice of the Executive Council, across the Parramatta River." Do you know whether any other promise was made to construct any public works out of the moneys arising from the sale of the Field of Mars? There was a verbal statement made by Mr. Farnell at the time of the first sale that a tramway should be made, but it was a conversational statement.
115. To whom was it made? It was made at the time of the sale to the people present.
116. Mr. Farnell was Minister for Lands, and was present at the sale? Yes, and he made that statement. I never thought myself personally that it was binding.
117. The statement was that a tramway should be constructed to the Field of Mars? Yes. The people said, "Are you going to make a tramway, Mr. Farnell? Are we going to have a tramway?" and he answered in a somewhat conversational style, "Oh, you will have a tramway. Yes, you shall have a tramway." But it was not a Ministerial promise.
118. Do you know of a proposal that has emanated from the Works Department to erect a bridge over Tarban Creek, on the Parramatta River? Yes, I know there is such a proposal.
119. Was any promise ever made by the Lands Department or by any authoritative body that you are aware of that this bridge should be constructed out of the proceeds of the sale of the Field of Mars? Never.
120. You are quite sure of that? Yes. I might point out that the Act only mentions the building of one bridge, and the department has already built three bridges.
121. The Field of Mars Resumption Act refers to one bridge across the Parramatta River; that bridge has been erected, and two others besides? Yes, and we have made roads as well. We are, I admit, clearing the land for sale, but we have made roads. Up to 1887 there was an expenditure of £72,000 for roads, &c.
122. Do you know what the sale of the land realised? The area of land sold up to the present time is 1,712 acres, and the amount realised £96,203.
123. Do you think that amount has been expended on these improvements? The Government expended £72,000 on roads only as against £96,000 received.
124. Including the bridge? Not including the bridges. The building of both the bridges and the roads, with the maintenance of the former, has cost about £200,000. It has always appeared to me that on Mr. Farnell's verbal statement made on the ground the people of the Field of Mars are trying to build up a case.

125.

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J. W. Deering, Esq. 25 Feb., 1890.

125. *Mr. Garrard.*] They have a very good foundation when they have the statement of the Minister, have they not? Not given in a verbal way like that. I do not think such a statement made at the time of sale would bind the Cabinet; but this is only my individual opinion.
126. *Mr. Copeland.*] The auctioneer has more authority on such an occasion than the Minister? Yes.
127. What area in the Field of Mars Common remains unsold? 3,600 acres.
128. *Mr. Garrard.*] What do you estimate is the value of that area? About £20 an acre average.
129. Would the land remaining unsold realise sufficient to build a tramway? At £20 an acre it would only realise £72,000.
130. What do you think the tramway would cost? I could not say. I have not seen the section, and do not know the depth of the cuttings.
131. Do you think it would cost more than £72,000? Yes, if it is to cross the Parramatta River bridge, and Tarban Creek bridge is to be erected.

THURSDAY, 6 *MARCH*, 1890.

Present:—

The Honorable JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	JACOB GARRARD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	HENRY COPELAND, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.

JOHN HURLEY, Esq.

The Committee further considered the proposed Bridge over Tarban Creek, Parramatta River.

Charles Edward Jeanneret, Esq., Mayor of Hunter's Hill, sworn, and examined:—

C. E. Jeanneret, Esq. 6 Mar., 1890.

132. *Mr. Garrard.*] I believe you are Mayor of Hunter's Hill, and were at one time a Member of the Legislative Assembly? Yes.
133. Do you know the site of the proposed bridge across Tarban Creek? I do.
134. Is there very much traffic between the metropolis and Hunter's Hill to the places beyond the Lane Cove bridge? There is very considerable traffic there. Independently of other traffic, the establishment of colleges in that locality has added very largely to the traffic.
135. You allude to the Marist Brothers College at Hunter's Hill and the Riverview College on the northern side of Lane Cove River? Yes.
136. But do not the majority of the people visiting both Hunter's Hill and the college on the other side of Lane Cove travel by the steamers that touch at these places? Necessarily the majority go by the steamers, but a large number of people go by the road.
137. You are a very old resident of that locality? Yes; I have lived there for thirty-three years.
138. Can you give us any idea of the average number of vehicles that cross the Parramatta bridge with the view of going to Hunter's Hill, and the other places? I could not. I never made an estimate of the number of vehicles. The people at the bridge could give you accurate information on that point, as I believe it is their business to keep a record.
139. Do you know the estimated cost of the proposed bridge? I understand that it is estimated to cost £30,000.
140. Do you think the people are put to such straits that they require the expenditure of this large amount of money to overcome the obstacles in getting to Hunter's Hill? I think the bridge would be of very great benefit to the municipality of Hunter's Hill, and also the municipalities on the North Shore, and it would benefit the Government lands adjacent.
141. What would it save in point of time or distance in getting to Hunter's Hill? The distance from the northern side of the Parramatta Railway bridge to the southern side of the Lane Cove bridge by the present road is 150 chains. The distance by the proposed bridge would be 65 chains, so that the distance saved would be about one mile and a quarter.
142. Do you think that for the saving of that short distance the country would be justified in erecting a bridge across Tarban Creek as proposed? I think so, and one reason is that the district has a very large claim upon the Government on account of the proceeds of the Field of Mars Common. This common was given up to the Government on condition that the proceeds were to be kept in a separate account, and appropriated for local works.
143. The Committee have heard this assertion very frequently;—do you know the Act under which the Field of Mars Common was resumed? I am perfectly cognisant of that Act.
144. Is there anything in it relating to an agreement between the people and the Minister for Works? No. But there is a provision in the Act to the effect that the proceeds of the common should be placed to a separate account, and I am aware that the Government have given a promise, or stated in Parliament their intention, that all this money should be expended in the district.
145. Was this merely a general statement on the part of some member of the Government, or was it a Government statement? It was a Government statement. I think it is a principle recognised by the Government that the proceeds of the common should be devoted to local improvements after the building of bridges.
146. Suppose that promise was given, how would that affect the construction of this bridge? This bridge would be of very little benefit, if any, to the Field of Mars proper? It would be an immense benefit to the Field of Mars as well as to all persons residing in the parish of Hunter's Hill.
147. But the Field of Mars Common lies to the north-west of the proposed bridge? Hardly to the north-west. It lies to the west of north, but it stretches away a great deal to the north. The most valuable portion of the common, and that most likely to be largely populated, is in very close proximity to the site of the proposed bridge.
148. Can you tell us who were supposed to have rights to this common—merely the people about Gladesville and Ryde, or the people of Gladesville, Ryde, and Hunter's Hill? The people of Ryde, Hunter's Hill, and Gladesville have all equal rights to the common. The common was granted for the benefit of all persons having land in the parish of Hunter's Hill and the Field of Mars. Hunter's Hill is particularly mentioned.

149.

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C. E. Jeanneret, Esq. 6 Mar., 1890.

149. But the parish of Hunter's Hill extends beyond the mere municipality of Hunter's Hill? Of course it does.
150. And would include what is now known as Gladesville? Yes. It includes also what is known as Ryde. But the remotest portions of Hunter's Hill, even as far as Woolwich, have claims to the proceeds of the common equal to the claims of those living adjacent to the Field of Mars. In fact, we have the greatest say, for we were in the majority at the time of the surrender of the Field of Mars, and I think it was mainly at the instance of those living at our end that the common was given up. The Ryde people, and those living close to the common, were rather opposed to its surrender. But it was so far away from us that we preferred having it sold, and the proceeds applied to the benefit of the district.
151. As a matter of fact, if this bridge were erected it would be only the people living to the eastward of Joubert-street and the people on the other side of Lane Cove bridge who would be benefited? And a considerable number living on the western side of Joubert-street.
152. How many? A considerable population about there—Eltham, and all those places. But, of course, it would be principally for the benefit of those going beyond Lane Cove, and those on the eastern side of Joubert-street.
153. Do not the majority of the inhabitants of Hunter's Hill and Lane Cove generally use the ferries which travel to and from Sydney? They do.
154. And it is only a small number of the people, those who are carriage folks, who occasionally use the road? Yes, a comparatively small number.
155, Putting the Field of Mars promise, whatever it may be worth, on one side, and considering that the money be drawn out of the general tax-payer's pocket, do you think the Government would be justified in erecting the bridge as proposed? Apart from the claims we have, I would not venture to say that the Government would be justified in going to that large expenditure at the present time. Eventually it will have to be done, but at present we are in this position: we have had nothing whatever from the Government for Hunter's Hill. We have had no Government aid whatever for anything except the ordinary municipal allowance. We have had to do everything for ourselves while the other places higher up have received very great benefits. For instance, the construction of the Parramatta River bridge is comparatively of small benefit to Hunter's Hill while it is of very great benefit to Ryde and Gladesville.
156. If that is a small benefit this proposed bridge will be a small benefit? But this bridge will make it a large benefit. At present as we have to go more than double the distance round to reach the Parramatta River bridge it is practically of no use whatever to us. Any omnibus traffic or any other traffic that crosses that bridge is of no use to Hunter's Hill.
157. Do you see on the map a blue line showing an alternative scheme for a bridge in a different locality? Yes.
158. Do you think a bridge across there would suit the requirements of the people? I do not think it would be of any use at all.
159. Did you not commence a bridge there at one time? I commenced a little bridge, or an embankment across there. I do not think it would be of any use. It is more in connection with the ferry service.
160. And the bridge higher up still, shown on the map by a pencil line, would be of still less use? Yes. The bridge indicated by the blue line would be of use merely for foot passenger traffic.
161. But for a bridge to be of any great service to the people of Hunter's Hill and beyond Lane Cove bridge the site chosen by the Department and shown on the map by red lines would be the one? Undoubtedly. It would be a great benefit.
162. But you are of opinion that if there were no promise, nor anything in that way connected with the Field of Mars, the Government would hardly be justified in expending public money by constructing the bridge at the present time? I should not like to say they would be justified just at present. When you consider the large district of the North Shore and the very large traffic now going on right away to North Willoughby, and the large expenditure of Government money upon these roads, I think there is some warrant for doing it.
163. Is it not a fact that the greater part of the vehicular traffic for Riverview College and the land immediately around it goes at present via North Shore and Crow's Hill? By no means. There is a very large amount of traffic from Balmain. In fact, a surprising number of vehicles are to be met with along that way, and the number seems to be increasing every day. I drive there sometimes myself, and I meet them.
164. Do you know the tile works just before you come to the Lane Cove Road on the right hand side going up? Yes.
165. What road do they use to send their produce to Sydney? I cannot say. I know that a great many bricks come from the North Shore Brickworks across the bridge.
166. In order to serve their customers in the western suburbs? Yes. I also know that a great quantity of bricks come from Sydney. Although bricks are manufactured at the North Shore they seem to be sent from Sydney along that road to the North Shore.
167. *Mr. Copeland.*] Did I understand you to say that there is a provision in the Act that the proceeds of the Field of Mars Common should be dealt with differently to any other public revenue? Yes. You will find that according to the Field of Mars Resumption Act, the money is to be placed to a separate account, and the interpretation put upon that by the Government since has been that the money was to be devoted to local public purposes.
168. By what Government? By the Government in which Mr. Garrett was Minister for Lands when he gave a promise of the Executive in writing that certain things should be done for the district.
169. You have been a Member of Parliament representing a country constituency have you not? I have.
170. Can you mention any single instance where the proceeds of the sale of a common have been dealt with in any different way from the proceeds of any other land sale—that is to say, did the money go into a separate account, and was it used for the construction of special works? I presume the law has been carried out. Of course I have not seen the account.
171. Are you under the impression that there is an account? Yes, and it is controlled by the Lands Department.
172. And that account is available for the construction of public works? Not generally, but public works in pursuance of that Act.

173.

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C. E. Jeanneret, Esq. 6 March, 1890.

178. Do you think that the money for any of the bridges, or expenditure of any other kind has been taken out of this particular fund? I am under that impression.
174. You think the money has not come out of the consolidated revenue? Some of it must have done, because at the present time the account is overdrawn.
175. But can you give a single instance were the cost of any public work has been taken from this special fund, and where the money has not gone through the usual form of being voted or appropriated from either loan account or consolidated revenue? I moved for a return in Parliament of the money expended on the Field of Mars Common, and of the money derivable from the common, and I got the return, but whether the money expended was by special vote or otherwise I do not know. I presume it was in accordance with the Act.
176. You know that the Act says:—"And the proceeds of every such sale (after deducting therefrom any costs or charges incurred herein) shall be paid to the Colonial Treasurer, and by him be carried to the credit of a separate fund or account as part of the public revenue." You observe the words "as part of the public revenue." You have been a member of Parliament for a country constituency; can you mention a single instance where the proceeds of the sale of a town common has been dealt with differently to the proceeds of any other land sale? No, I cannot. I may be wrong, but I have always been under the impression from the provision of the Act, and the interpretation placed upon it by the Government that a separate account of the proceeds of the Field of Mars Common was being kept as against the expenditure upon the bridges.
177. Can you point out any speciality in this case as showing why the people who had the use of the commonage for many years should be dealt with differently to the people having the use of other commons in the colony? Certainly I can. The Field of Mars Common was given up to the Government on the express condition that certain local works were to be constructed out of the proceeds of it, and you will find that this is expressed in the Act.
178. When you say the common was given up, was it given up in any way differently to all the other commons that have been given up? Yes, it was. There was a special Act of Parliament on the petition of the people and the promise of the Government.
179. Why was that special Act of Parliament necessary? Because there was no other way of dealing with the matter.
180. Because the common was vested in trustees? I presume so.
181. And the land therefore had to be resumed at that time. You are aware that if the land had to be dealt with at the present time it would not have to be resumed by special Act of Parliament? Perhaps not. But the provisions of the Act expressly state what the money is for. The Act states how the money is to be applied.
182. But the recital in the Act refers only to a bridge? That is all. But there was a distinct announcement by the Government, as to which I can speak confidently because I was in the House at the time, that the whole of the proceeds of the common would be devoted to local works. This statement was made in the House by the Minister.
183. But is it not a fact that as a sop to the people for the loss of the common, the Government proposed to build the bridge, and that accounts for the other words in the Act in reference to a separate account being kept of the proceeds; because at that time it was not known whether or not the proceeds would realise enough to pay for the cost of the bridge? As a matter of fact, it was anticipated that the bridge would cost more than the common would realise.
184. And that explains the keeping of a separate account? Yes. It afterwards turned out in consequence of the largely increased value of land that the common would realise a great deal more than the cost of the bridge across the river.
185. The Government having completed their part of the contract in building that bridge, and one or two other bridges, besides taking a railway through a portion of the common, do you not think they have more than complied with all their stipulated agreements? The railway is of no advantage except to the portion of the common which is very remote indeed from Sydney, viz.: Carlingford.
186. It is an advantage to that portion of the common that was sold? No; not to the portion that was sold at the first two or three sales, none whatever.
187. The railway is of advantage to those portions that have been sold recently—since it was constructed? Unquestionably; but until the railway was constructed those portions were of no value at all.
188. What I want to get at is this: Can you furnish any reason why the proceeds from the sale of this common should be dealt with differently from the proceeds of the sale of any other common in the country? I think I have already given a reason. The common was voluntarily surrendered by the people to the Government on the express understanding that a bridge should be built across the Parramatta River. That bridge has been built. The sale of the common has realised or will realise very much more than the cost of the bridge. The Government have distinctly promised that any surplus arising shall be applied for the benefit of the district.
189. Which Government has distinctly promised? The Government in which Mr. Garrett was Minister for Lands.
190. Is there any written evidence of that statement? Yes; you will find it in *Hansard*. I will undertake to produce it. And not only that, but the Government have distinctly by a Minute of the Executive promised to do certain other works out of the proceeds of the common.
191. The same Government? Yes; the Government in which Mr. Garrett was Minister for Lands. I may say that the common has always been dealt with in the Lands Department as a special part of their business, and also the works upon it.
192. The sale of it belongs to the Lands Department; but has that department ever exercised any supervision over the expenditure of the proceeds? Yes it has.
193. In what direction? In the laying out of the common and the making of roads. They have exercised a great deal of control over it.
194. That was only the same control that they exercised over every other common? What I mean is that the Lands Department has exercised special supervision over the expenditure upon the roads. They have not only surveyed the roads, but they have been the means of getting them metalled and of having bridges constructed, and everything else in connection with the common has been done under the direction of the Lands Department.

195.

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C. E. Jeanneret, Esq.
6 Mar., 1890.

195. You mean these new roads which were built recently by unemployed labour? Yes. I think the unemployed labour was used chiefly for clearing purposes; I do not think it was used so much for road-making.
196. I ask you, as a man who knows something of the country districts, whether the Lands Department exercised any more supervision over that common than they did over any other common in the country that they cut up and subdivided? I was always under the impression that they did.
197. Have they done anything more than they did at Willoughby? I am under the impression that they have. I only speak from conversations I have had about the common with Mr. Oliver, formerly of the Lands Department.
198. You are well acquainted with what is going on in the vicinity of Sydney; have they done anything more than what was done at Harbord, where there was a subdivision of Government land? Yes; they have done more than they have done anywhere else. If you go to the Field of Mars Common you will find a good macadamized road and good bridges. The places are aligned, and there are valuable reserves and all that kind of thing, where at present there is no population at all, and no traffic. That, I think, shows that they have dealt with it differently to the way in which they dealt with other commons. You will find some splendid bridges and some splendid macadamized roads and beautiful reserves in preparation for a large population; but there is at present no population there at all. I do not think there has been six houses built on the common yet.
199. But did not the Government do the same thing with the Holt-Sutherland Estate, which was private property? I do not know anything about the Holt-Sutherland Estate. I have not seen it for twenty years.
200. You know something about the Hornsby Estate? No; I have not been on that estate either for some years.
201. You have not told us how this right originated for the Field of Mars Commoners to be dealt with differently from the commoners in every other part of the colony? It arose in this way. There were 6,000 acres of land of very little value. The commoners asked the Government to resume that land, and build them a bridge across the river. The Government said, "You must first of all get a valuation made, and see if the proceeds of the land will pay for a bridge." We got Messrs. Richardson and Wrench to assess the common, and they valued it at £30,000, the estimated cost of a bridge at that time being £40,000. The Government then introduced and passed a bill, and on the condition that the bridge was to be built the common was surrendered. The Government then thought it would be wise to build the bridge first and sell the common afterwards. They built the bridge, and the first sale of the commonage land realised over £90,000. According to the estimate of the Lands Department, there still remains unsold £200,000 worth of land on the common. This may be slightly an over-estimate at the present time, because land is not as valuable as it was; but I have no doubt whatever that if the proposals of the Government are carried out the land will realise £200,000. In consequence of the Government not having carried out what they intended, I do not think that the £90,000 worth of land which has been sold would realise on a resale £25,000. In fact the land is practically useless in its present condition.
202. I suppose a very large number of people make use of the bridge across the Parramatta River? Yes. There is a surprising amount of traffic across the bridge from Balmain.
203. Would not that bridge have been constructed all the same if there had not been one single square inch of the Field of Mars Common? Certainly not.
204. You think the Government would not have built a bridge there, the same as they have done in other places, to meet the requirements of the people? I am quite sure they would not. They would not have entertained the idea for one moment.
205. Why would they not have treated those people the same as they treated the people of any other part of the colony? I do not know why, but they would not. The only thing that induced them to build the bridge was the surrender of the common. If the common had not been surrendered, I am quite confident that up to this day no bridge would have been built across the Parramatta River except the one required for railway purposes, which was built in the wrong place.
206. But you know that other bridges have been built where there has been a population? I do not know that such an expensive bridge has been built as that across the Parramatta River.
207. You know that there was a bridge built to accommodate the people of Cowra, for instance,—I mean an ordinary traffic bridge? But I would not compare that with the bridge across the Parramatta River. The Cowra Bridge is only a wooden structure, which cost, I suppose, about £15,000 or £20,000.
208. But you will admit that that bridge was built without any inducement, such as the giving up of a common? Yes, but the people could not cross the river without the bridge.
209. Could they have crossed the Parramatta River without a bridge? There was no population at that time to cross the river. There was no population in the district. The place has all grown up since the bridge was built.
210. But I suppose you are aware that the people of Cowra did cross the river without a bridge? I have no knowledge of the place before the bridge was built; but I should think it would be extremely difficult to cross it when the river was in flood.
211. Is it not a fact that the Government do as a matter of course build bridges in all parts of the colony where there is a necessity for them; or is it only in places where the people have a common to give up that they build bridges? There was no necessity for building the Parramatta bridge, and no justification for it at the time, unless the people could give the Government something in return for it, because the population there was very sparse. They had a punt by means of which they crossed the river, but having this large asset, which was vested in trustees, and which was considered to be to a large extent the property of the inhabitants, upon our giving up that property the Government were willing to construct a bridge.
212. You are aware that there are other commons that were in exactly the same position, and that have been taken away from the people and resumed under the present law? That is of recent date.
213. Within the last four or five years? Yes; but this common was surrendered nearly thirty years ago.
214. The reason it had to be done by special Act of Parliament was because the present laws were not then in existence? No doubt they were not thought of then.
215. Do you know that there is a large common between the Field of Mars and Richmond? Yes; the Ham Common as it is called.

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216. Was anything done with the proceeds of that common? I do not think it has been sold.
217. You are aware that if a common similar to the Field of Mars had to be resumed now, all that would be necessary to be done would be for the Minister for Lands to lay on the table for so many days the proclamation resuming it from the Trustees for public purposes? I am aware of that. But of course, all lands are dealt with differently now to what they were thirty years ago. As you are aware the reservations of 100 feet were promised to be granted for nothing thirty years ago, and now they charge for them more than double their value.
218. There is nothing in the Field of Mars Common Resumption Act except provision for a bridge? That is all.
219. And the Government have complied with that condition and have provided that bridge? They have, and they have gone a little further.
220. And the only claim the people can make now for further expenditure is, because they set up a title to all the proceeds of the sale of the commonage lands? They did set up a claim, and the Government whether properly or improperly I do not say—acknowledged the justice of it, and I think you will find on reference to *Hansard* that not only Mr. Garrett, but also Sir Henry Parkes promised that all the proceeds of the common should be devoted to the improvement of the district. In fact, I believe, that Mr. Frank Farnell has a written promise from the Government to that effect.
221. But as far as your parliamentary experience goes you do not know of any other case in the colony that has been dealt with in the same way that you wish the proceeds of this land to be dealt with? I cannot say that I do.
222. I suppose you do know of other commons that have been sold where they had more land than was required, and where the proceeds of the sale have been placed to the Consolidated Revenue account? I have no recollection at present of any particular common, but I imagine such to be the case.
223. You know such to be the case, and that commons are being resumed every day and sold, and the proceeds paid into the Consolidated Revenue? Yes. I believe this is an exceptional case.
224. *Mr. Trickett.*] Are you Mayor of Hunter's Hill at the present time? I am.
225. What is the population of Hunter's Hill? I am not in a position to say accurately, but the Council Clerk informed me yesterday that he expected to be able to announce presently that the population was 4,000. I hardly think at present it is as large as that. I should say the population was not much more than 3,000.
226. What is the value of the ratable property? Our rates at one shilling in the £, realized £1,600 a year.
227. Has there been any public agitation in Hunter's Hill for this bridge? There is a very general desire for it, but the Hunter's Hill people do not agitate actively in favour of anything; they only agitate to oppose anything that is being done.
228. Have any public meetings been held? They do not hold public meetings over those matters in Hunter's Hill.
229. There has never been a public meeting in support of this bridge? No.
230. You know that there are three modes of crossing the creek that have been proposed—one is the expensive proposal at a cost of over £30,000; another is to cross the creek a little further up at Dimilia-street; and another to cross the creek further up again at the grounds of the Marist Brothers? Yes. The one by Dimilia-street would be of slight advantage. It would give you a horse track and a footway to the Parramatta River, but I think it would be hardly possible to make a good road up the hill, because the ascent is very steep and the distance short. I do not think you could make a good road by it unless you constructed a very high bridge, almost as high as the one proposed at Joubert-street.
231. When the members of the Committee were in the locality yesterday we saw the commencement of a road made across Dimilia-street;—when was that started? I started that twenty-five years ago.
232. What name was eventually given to it? I have since heard it called "Jeanneret's Folly."
233. And it has never been carried out up to the present time? The Government stopped us.
234. For what reason? Because they said we were cutting off the people above from access to the harbour. The people having the water frontages above, I believe made an objection and the Government stopped the work on that ground.
235. I noticed yesterday that stones were still being shot at the end of this embankment? I do not know whether they are extending it. I think Dr. Manning, in the interests of the asylum, is making a bit of a wharf there. I know that he wished to have the whole of that bay reclaimed, and has applied to have the water frontages to Gladesville Hospital filled in and reclaimed. With regard to the other proposed bridge higher up, midway between Dimilia-street and the present bridge, I do not think that would be of any use whatever. The distance saved would not be great, and the ascent and descent would be very much greater than that of the present road. Then, again, it would be expensive because a lot of private land would have to be resumed.
236. Do you advocate a bridge over Tarban Creek in the interests of Hunter's Hill or in the interests of the Field of Mars? Well, in the interests of both.
237. But is not the Field of Mars much to the westward of Hunter's Hill? A portion of it is, but all the valuable portion of the Field of Mars lies closely adjacent to Hunter's Hill. As soon as you get away, say 50 chains, from the boundary of Hunter's Hill the Field of Mars Common becomes of comparatively little value. The price realised for land at the boundary of Hunter's Hill was £6 a foot, but when you get back some distance the price goes down to about £40 or £50 an acre.
238. If you were going to the nearest point of the Field of Mars how much would you save by going across the proposed bridge instead of by the present road? To the nearest part of the Field of Mars you would save a little more than half a mile.
239. Not more than half a mile? Between half and three-quarters of a mile.
240. So that really the chief advantage would be to the inhabitants of Hunter's Hill? Unquestionably; the inhabitants of Hunter's Hill would save about a mile and a quarter.
241. Have not the Government expended a large sum of money in connecting Hunter's Hill with North Shore by means of a bridge over Lane Cove River? Yes.
242. What is the distance of Hunter's Hill to the North Shore Ferry by that route? From Joubert-street to the North Shore Ferry it is, I think, about the same distance as it is to Sydney by Harris-street.
243. That is by the present road? Yes.
244. I suppose if there was a bridge connecting the North Shore with Sydney that would be a favourite route from Sydney to Hunter's Hill? Undoubtedly. 245.

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245. Is not Hunter's Hill a widespread municipality? There are no shops for any distance along the street. The main street from the Field of Mars to Woolwich—a distance of 2½ miles—is very thickly populated.
246. But that is all to the eastward of this proposed bridge? Two miles of it would be.
247. And would not the people living along that 2 miles be better served by steamer communication with Sydney than by going away from Sydney and coming back by means of the road? They are served in that way now, but unquestionably the main traffic would always be by the river, especially if a tramway is constructed, as is expected. It is the same with regard to Balmain. The people of Balmain will go across by steamer instead of going to Sydney by Harris-street or Pyrmont.
248. Then I suppose we must look at this bridge as much in the nature of a luxury, and not a necessity? You cannot say that it is an absolute necessity at the present time. As I said before, if the inhabitants had not a special claim upon the Government it would, perhaps, be expecting rather much that the Government should construct that expensive bridge just at the present time, although in the near future I think the people might have a very strong claim for it.
249. You made some reference in your evidence to a statement in *Hansard*, and to some statement made by Mr. Garrett when he was Minister for Lands; would you look those up and forward them to the Secretary? Mr. Frank Farnell, who, I understand, is to be examined, has a much more accurate knowledge of the correspondence than I have, and no doubt he will be able to give you the information.
250. But you say there was a statement in *Hansard*? There was a statement made in the House which I shall be very glad to look up and send to the Committee.
251. *Dr. Garran.*] Reckoning from the obelisk in Macquarie Place, how far do you call it from Sydney to Solomon's Corner by Pyrmont Bridge? I think it is about 6½ miles. It is 7½ miles by Harris-street.
252. How far is it from the same point by way of North Shore and the Lane Cove Bridge? I think it is about the same distance.
253. Then so far as a person living at Solomon's Corner is concerned, if this bridge is made it will be as short to go one way as the other? Certainly not—they will save one mile and a quarter.
254. I thought you said it was the same distance? It is the same distance round both ways as the roads are at present, but if a bridge were put across Tarban Creek as proposed there would be a saving of about one mile and a quarter.
255. So far as the people on the North Shore side of Lane Cove are concerned they are reasonably provided for by the new railway are they not? I do not see that the railway is any great advantage to them.
256. Will they not make to the railway? I do not think so.
257. Do you believe that the people living there would cross this bridge and come to Sydney by road? Certainly not. I am speaking of the general population. I do not think that the railway is any use to the people over there at present.
258. But supposing the railway has a good terminus do you not think that it will accommodate the Lane Cove Road population? Yes, the Lane Cove-road, but not the Lane Cove River. It would run along the road.
259. Then you do not look at this bridge as being of any service to them whatsoever? I do not think it is of any service to them.
260. No service purely to Hunter's Hill? No, of service to the general community who like to drive about and see the country. It is a very nice drive—one of the best, if not the best drives about Sydney. You must have noticed the beauty of the drive yesterday.
261. Do you advocate it merely as a tourists route? It is to a large extent a tourists route. It is a very favourite drive from Sydney.
262. It is not so much required for the service of the Hunter's Hill residents as for the convenience of pleasure drivers? That is the case.
263. I understood you to say that you would not advocate this bridge on its own merits purely and simply, if it were not for the funds derivable from the Field of Mars Common? Well, it is my duty to advocate it as a representative of the municipality in these days when a man is bound to get everything he can.
264. I am speaking of the question on its merits? I hardly think, candidly speaking, that we should be justified in asking for the bridge if we had not some special claim.
265. Granting that this fund is still in existence as you contend, is there not also a supposed charge upon it on account of the new tramway? Yes a small amount—only about £19,520.
266. Do you not think, as Mayor of the municipality, that a tramway is on the whole a superior advantage to the proposed bridge? Unquestionably.
267. Then do you not think that the tramway expenditure should be the first charge upon any balance? I do.
268. Then even admitting that there is a sum of money available you do not propose to spend any money on this bridge until you have seen how much it will cost to make the tramway? No. I think the tramway is the first thing that should be considered.
269. Then on your own argument you would not vote anything for the bridge until you had seen whether the tramway would exhaust all the balance? If the tramway was to be secondary to the bridge I certainly should not, because I consider the tramway to be of paramount importance.
270. And you put the bridge second? Yes.
271. Then on your own showing this bridge should wait until we see whether the tramway will exhaust all the available resources? I do not think there is any question about available resources because the Government have already estimated the cost.
272. But they may have over-estimated the cost? But even making a liberal allowance for an over-estimate.
273. Surely as a man with a knowledge of finance you would say "let us see what the tramway will cost first"? Well if I had the disposal of the common I should carry out both works, for I am satisfied that by doing so the Government would be largely in pocket.
274. You would carry out both works if you had to pay any loss out of your own pocket afterwards? I should certainly take the risk of it if I had the common. I would pay for both if they would give me the balance of the common.

275.

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275. At any rate you admit that the tramway has the first claim? Yes.
276. *Vice-Chairman.*] Have you any recollection of the circumstances under which the common known as the Field of Mars was originally granted? Yes.
277. It was granted to certain trustees for certain commoners? Yes.
278. I have just looked at the Act, and I see that those commoners were described as "settlers, cultivators, and other inhabitants of the Field of Mars and eastern farms, in the county of Cumberland." Do you know whether the residents of what are now called Hunter's Hill and Gladesville came within the category of the Field of Mars? They called them the eastern farms, I think.
279. Is it the case that certain grantees had Crown land in the eastern farms with the rights of commonage? I happen to be interested myself in one of the barren blocks that lie about Woolwich. It is utterly destitute of grass and would not feed a mouse, and yet it is described as one of the eastern farms. At any rate we all took part in the surrender of the common, and in fact the Hunter's Hill people were the principal agitators.
280. But the common was in the hands of trustees—those trustees being the Revd. Mr. Turner, Mr. Devlin, and Mr. Isaac Shepherd? Yes, they were elected by the commoners and we always took part in the election.
281. You had a vote in the elections? Yes.
282. You are sure of that? I am certain.
283. Did you own any part of the eastern farms yourself originally, which embraced commonage rights? Yes.
284. Were the commonage rights provided for in the original grant? All I know about it is that I was often called upon to vote for the election of trustees, and one thing and another. I had the right of depasturing my stock, and the right of cutting timber, which other people had not. No one could cut timber on the common, except those who had commonage rights, without express permission from the trustees.
285. You had that right? Yes.
286. Where was your property? At Hunter's Hill.
287. *Mr. Copeland.*] How did you get that right? By virtue of being a freeholder.
288. But did your Crown grant stipulate that you should have any special commonage rights? No, I do not think so. I do not think any of the grants specified that.
289. Then it was simply a common for the use of owners of land, just the same as every other common in the country, except that, along with a few others, it was dedicated for commonage use, and vested in the hands of trustees? Yes. I was under the impression that the parish of Hunter's Hill was more particularly described than appears to be the case from Mr. Lackey's quotation from the Act. When I speak of the parish of Hunter's Hill, I do not mean that portion which is now known as Hunter's Hill, as distinct from the parish of Ryde; but I refer to the whole of that district as the parish of Hunter's Hill. It is now the parish of Hunter's Hill.
290. *Vice-Chairman.*] Hunter's Hill was originally the name of a private property, was it not? I fancy Hunter's Hill is what is now called Ryde. What we call the Municipality of Hunter's Hill was comprised in not more than five or six grants, and a few whaling allotments, and that would embrace the whole parish of Hunter's Hill.
291. *Mr. Copeland.*] Do you know of a single grant, in the whole of that neighbourhood, that had any special conveyance of commonage rights, or any provision with reference to commonage rights? No, I do not.
292. Then it follows that this common was exactly the same as dozens of other commons in other parts of the country? It was granted as a common, and vested in trustees for the use of the people resident in the neighbourhood; but on account of its having been vested in trustees it could not be resumed by the Government at that time, without a special Act of resumption? I think it was vested and re-vested. I think there was a promise, or dedication in some way, and then there was a re-vesting under some special conditions.
293. *Mr. O'Sullivan.*] Would not a large proportion of the traffic that would cross the proposed bridge, be that of pleasure-seekers? A very large proportion of it—persons coming out for a drive, taking a circuit from Sydney to North Shore, and back again over the bridges. It is a favourite drive.
294. Do you think those pleasure-seekers would object very much to drive one mile and a quarter through that beautiful country? I do not think they would make any great objection, but still they would like to shorten the distance, because it is a good long drive—about 14 or 15 miles round—and a great many more would take the drive if it were a mile or so shorter.
295. If, as you admit, the population to the east of the bridge, at what we now call Hunter's Hill, are served by the ferry boats, and if a large proportion of the traffic across the bridge would be that of pleasure-seekers, there would seem to be no immediate necessity for this work? I think it might be taken into consideration that nearly all the people at Hunter's Hill are supplied with their necessaries from Sydney, and that all the working men going to work there drive round in their spring carts. I see great numbers of them going round that way, and the provisions are nearly all drawn by the road. All the business people in Sydney send their carts round that way.
296. Do you think that the construction of this bridge would be likely to militate against your chance of getting a tramway? I do not think it would in the slightest degree.
297. *Mr. Humphery.*] How long does the steamer take to travel between Hunter's Hill and Sydney? From Hunter's Hill wharf to Sydney from 25 to 30 minutes.
298. How long does it take to drive from Hunter's Hill to Sydney? It depends upon the speed of the horse. I can never do it under an hour and 10 minutes.
299. If the bridge were constructed the time would be reduced by 7 or 8 minutes, or at the most 10 minutes? The distance would be reduced by one mile and a quarter.
300. By a mile and 5 chains? That would be about 10 minutes.
301. So that there is a steamer journey of less than 30 minutes against a road journey of an hour? Yes. People would not drive into Sydney on business, that is certain.
302. Is there one public vehicle plying for hire between Hunter's Hill by the road? No.
303. Who are the people who travel from Hunter's Hill to Sydney by road? Only persons who want to drive round to see their friends—persons calling or something of that sort, and persons who want to go to Petersham,

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Petersham, Ashfield, Burwood, or any of those western suburbs. All persons wanting to go to any of the western suburbs will, of course, drive; and also all people sending round provisions, goods, and building material, or anything of that sort.

304. If the bridge were constructed the saving in time would not exceed 10 minutes? Not for a swift-going vehicle, but I should think that a horse and cart conveying building material would save 20 or 25 minutes, besides avoiding some very steep grades.

305. *Mr. Garrard.*] That would be a very slow horse? Well, it would save a good bit.

Frank Farnell, Esq., M.P., sworn, and examined:—

F. Farnell, Esq., M.P. 6 Mar., 1890.

306. *Vice-Chairman.*] You are a member of the Legislative Assembly, representing Central Cumberland? Yes.

307. How long have you represented that district? For three years.

308. You know the site of the proposed bridge over Tarban Creek? Yes.

309. Do you think it is a desirable work? Well, there are other works of a more urgent character that might be carried out—for instance, there is a bridge over George's River at Liverpool. At the same time I think it is a necessity that the bridge should be constructed.

310. Do you know anything about the history of the Field of Mars Common? Yes; in 1804 the original grant was issued and trustees were appointed, but owing to disinclination on the part of the trustees to act, the deed of trust lapsed and new trustees were appointed in 1849. Time went on, and the people living at Ryde, Hunter's Hill, and Gladesville were anxious for a quicker means of getting to town. The only accommodation for crossing the river which existed in those days was afforded by a punt. They made a bargain with the Government that if two bridges were constructed, one over Iron Cove and one over the Parramatta River they would cede the Field of Mars Common to the Government on the understanding that if the common were sold the cost of the bridge should be taken from the proceeds, and any surplus should be spent on improvements in the district. In verification of this statement I may quote the following letter, written to Mr. Joubert by Mr. Fitzpatrick in 1861, when the latter gentleman was Under Secretary for Lands. It is as follows:—

Department of Lands, Sydney, 10 July, 1861.

Sir,

Referring to your letter of the 20th February last, submitting, on behalf of some residents of Hunter's Hill and Five Dock, observations in support of the petition presented by Messrs. Lyons, Blaxland, and others from certain persons holding a right of commonage over the Field of Mars Common, I am directed to inform you that, a report having been received from the Acting Surveyor General as to the value of the land, Mr. Secretary Robertson consulted his colleagues on this matter, and they concur in the desirability of obtaining legislative powers to enable the Government to sell the common, as prayed for in the petition under reference, and to apply the money derivable therefrom to the formation of a road and the construction of bridges, so as to connect the north side of the Parramatta River more directly with Sydney, as proposed by the petitioners. Any surplus funds to be expended in other public works of general advantage to the people having a right to enjoy the commonage reserve in question. I am to add that the necessary communication has been made to the Crown law officers, for the preparation of the requisite bill for the purpose.

I have, &c.,
MICHAEL FITZPATRICK.

In conformity with the request of the Minister for Lands a Bill was submitted to Parliament and passed, and it now stands on the Statute Book as 38 Victoria, No. 3.

311. That Act says nothing about building bridges? No; but a distinct promise was made that any surplus after paying for the erection of the bridges should be spent on works which would be of advantage to those who had a right over the common.

312. Do you recollect who were the commoners originally? The commoners were those people who were resident in the Ryde District.

313. Those holding certain grants which carried with them commonage rights? Yes.

314. Do you know who they were? I think Mr. Devlin was one, and the others were Mr. Squire and Mr. O'Donnell.

315. Certain grants were given in the early days to the occupants of what were called the eastern farms with the right of commonage? Yes.

316. What I want to get at is whether the neighbourhood in which the proposed bridges are to be constructed comprised land belonging to the original owners? Yes; it did.

317. Do you recollect who were the original holders of what are now called Gladesville and Hunter's Hill? My father's predecessors were holders of a large estate there containing, I think, 1,000 acres, and which was known as the Squire Estate.

318. That was near Ryde? No; it was within the present boundary of the Municipality of Hunter's Hill.

319. *Mr. Garrard.*] Where is the boundary of Hunter's Hill;—how close is it to Gladesville? Gladesville just joins Hunter's Hill.

320. It comes across Tarban Creek westerly? Tarban Creek forms a division between the Ryde Municipality and Hunter's Hill.

321. Hunter's Hill does not go into Gladesville? No.

322. You do not know of your own knowledge whether any of the grants for the eastern farms, Ryde, or Hunter's Hill, contained any special reference to the rights of the grantees to the common? That I could not say. I can only speak from hearsay.

323. There were certain grantees there, then a common was given to them, and there were no specific rights under their deed of grant to this common? I do not know the provisions contained in the deed.

324. Do you think the Government would be justified in spending money on a bridge at this particular place, which would serve so few people and cost so much, when after all it would only save about 1 mile and 5 chains? It saves backwards and forwards over 2 miles. As I said before, it is under peculiar circumstances that we ask for the construction of this bridge.

325. Putting on one side altogether any compact between the Government and the commoners as to the expenditure of money realised from the sale of the Field of Mars, do you think the Government would be justified in erecting a bridge there now, if the money had to come out of the ordinary consolidated revenue? If the money were to come out of the ordinary consolidated revenue and there were funds at the disposal of the Government, I should say, "Yes." But if the money were to come of a loan, I should say, "No;" because I do not believe in that principle. I have always opposed the building of bridges out of loan votes.

326.

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326. Is it not a fact that the people of Hunter's Hill and those on the northern side of Lane Cove River who would be served primarily by the erection of this bridge now go to and from Sydney principally by boats? A great many people travel by the boats, but a greater number of pleasure seekers drive round the road on Saturday afternoons and Sundays. And then there are a lot of people who live over Hornsby way who take a route across Lane Cove bridge, and right round past the Gladesville Asylum. The people of Hunter's Hill who have rights in connection with the Field of Mars, and who claim that this bridge should be built, are not influenced in the matter by selfish motives but are acting more in the interests of tourists and others who would use the bridge. It is in the interests of the general public that we are asking for this bridge, and not in the interests only of the people who live at Hunter's Hill.
327. So far as the people of Hunter's Hill are concerned very few of them would use it if it were built? They would all use it who had vehicles and wanted to go to Sydney.
328. How many people at Hunter's Hill have vehicles of their own? I do not know. There is a population in the district of about 4,000.
329. But as a matter of fact, when they come to town they usually come by the steamer? Yes; but if they wanted to visit any of the other suburbs they would have to go round by the road, which is not all that could be desired.
330. Will you look at this plan. The red line across Tarban Creek shows the proposal before the Committee. The blue line shows the alternative proposal of the Department for a bridge. Do you think the latter would be of any use to the people of Hunter's Hill and Lane Cove? If you could construct that at a somewhat less cost and make it a wooden instead of an iron bridge it would meet the requirements and would shorten the distance.
331. Not so much? No; but the people would be satisfied to take the alternative proposal.
332. And with regard to the proposal indicated by the pencil line further up? It would be better not to have it at all. We might just as well go right round.
333. *Mr. Trickett.*] With regard to people going to the Field of Mars, I apprehend that this bridge would not be of very much use? Yes, it would be of use to those people who have purchased land at the point nearest to Sydney.
334. But the Field of Mars is considerably to the west of Hunter's Hill, is it not? No, not exactly to the west, more to the north-west.
335. However, the bridge would be of greater benefit to the people of Hunter's Hill than to those living at the Field of Mars? It would be of equal benefit to the purchasers of the Field of Mars, who, I believe, had a promise that the bridge would be erected.
336. What promise was that? It was a sort of informal promise made by the Minister.
337. On what occasion was it made? It was made by my father when he was Minister for Lands; but I think his proposal was vetoed by the other members of the Cabinet—the same as the tramway proposal.
338. Mr. Jeanneret, in his evidence, said that some statement as to this bridge was made in Parliament by Mr. Garrett; do you know of any such statement? Not as to the bridge, but as to the tramway. I have had promise after promise.
339. But not as to the bridge? No.
340. We would be glad if you could enable us to ascertain whether any promise with regard to the bridge has ever been made; are you aware of any? I know it was stated by my father at the sale, or at any rate to the purchasers—it may have been stated by the auctioneer on my father's behalf,—that the bridge would be constructed. This matter was first taken up by Mr. Tornaghi, when he was Mayor of Hunter's Hill, about ten years ago, and I renewed the application a few months ago, with the result that the proposal was referred to this Committee, but further than that I know nothing. I do not know of any direct promise having been made in the Assembly.
341. Has there been any agitation for this bridge in Hunter's Hill that you are aware of? I know this, that when I first contested the constituency I advocated the construction of the bridge, and my sentiments were cheered, if that can be taken as any indication.
342. Do you not consider that the construction of this bridge at the present time at such a large expense would be more a luxury than a necessity? It is not of that urgent nature that other proposals might be, as, for instance, a bridge over George's River, where 30 lives have been lost, and where nothing has been done. I should say that that deserves to be attended to before Tarban Creek, most certainly.
343. You look upon it rather as completing the series of bridges? Yes.
344. That connecting the Parramatta bridge with the Lane Cove bridge, it would make a direct line of bridges in that direction? Yes.
345. I think in one of your letters to the Department you said that a foot-bridge might answer all purposes? Yes; I think a foot-bridge might answer. It would shorten the distance for foot passengers. At one time it was proposed to have a tramway running across the Parramatta River bridge, and I thought the people of Hunter's Hill might use the tramway, and that a foot-bridge would give them easier access to the tramway.
346. Even if the bridge were constructed, would not the greater part of the people of Hunter's Hill still go to Sydney by the steamers as the quickest and shortest route? There is no doubt about that.
347. *Mr. O'Sullivan.*] From your evidence I gather that you consider that this bridge is not a pressing work? No; it is not a pressing work.
348. And that, if the alternative bridge were constructed, that would satisfy the requirements of the district for some time to come? Yes. I should like to say in regard to the sale of the Field of Mars, that the highest price realised at the sale was £300 per acre. When my father was Minister for Lands he received an offer to purchase the whole common for £750,000, but he could not deal with the matter except by special Act of Parliament.

Angelo Tornaghi, Esq., sworn, and examined:—

A. Tornaghi, Esq. 6 Mar., 1890.

349. *Acting Chairman.*] You live in the neighbourhood of Hunter's Hill? Yes; I have lived there for twenty-eight years.
350. You know the site of the proposed bridge? Yes.
350½. Do you consider the work a desirable one? If a bridge were constructed there it would shorten the distance to Sydney by a mile and a quarter, and avoid a big hill. I may say that I was a large purchaser of land at the Field of Mars, and gave as much as £300 an acre because I heard that there was to be a bridge and a tramway, otherwise I would not have paid such a price. 351.

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A. Tornaghi, Esq.
6 Mar., 1890.

351. Is the proposed site the one where the people desire to have a bridge? Yes; the matter was decided long ago.
352. Is there any division of opinion as to the site? I have never heard of any.
353. All agree that it is the proper place? Yes. It is in a straight line from one bridge to the North Shore. It will be quite a straight line all through.
354. In what parish is your property? Hunter's Hill.
355. Do you come under the denomination of a commoner. Are commonage rights attached to your property? No. The property I bought was in Ryde, but we expect to divide it and make it so that it will always be in Hunter's Hill. The common was in the Ryde district.
356. *Mr. Copeland.*] I believe you were present when the Field of Mars Common was sold by auction? Yes.
357. Did you make any purchases at that sale? Yes. Mr. Farnell was there, and he said there was to be a bridge and a tramway soon, and it was on the strength of that statement that I bought the land. I was the biggest buyer and paid a very high price.
358. I suppose there were a good many people present at the sale? Yes. At the second sale, which took place at the auction rooms, I bought some more land, and on that occasion the auctioneer stated that it had been decided in the Cabinet that there should be a tramway and communication to the spot.
359. Do you say that the auctioneer made that statement when he was selling the land? Yes; on the second occasion.
360. Did the auctioneer make any public statement when the first sale took place? No; the statement was made by Mr. Farnell.
361. The auctioneer himself made no public announcement at the first sale? No.
362. Did Mr. Farnell make a public announcement, or was it merely a conversation? He made it there. He said that a tramway would soon be there, that it would be a great convenience to go quickly to Sydney, and I bought land on that very account.
363. The Committee would like to know how Mr. Farnell made this statement. Did he get up and make a speech, or did he get on a stump and make the announcement? It is some years ago now, and I could not say. He was close to the auctioneer, and I heard him say that a tramway or communication would soon be made to the spot to bring it within 25 minutes of Sydney.
364. If this tramway is constructed, I suppose that all Mr. Farnell promised will have been carried out? From that point of view it might be so, but if I am not mistaken, I remember on one occasion going with a deputation to Mr. Lackey, then Minister for Public Works, when I heard it stated that a bridge was required.
365. Are you alluding to the bridge over Tarban Creek? Yes.
366. Did Mr. Farnell make any statement at the time of the auction sale to the effect that a bridge would be built by the Government over Tarban Creek? No; I do not remember that he made any statement of that kind.
367. Were you at the second sale? Yes.
368. And heard what was said by the auctioneer? Yes. The auctioneer said that the Cabinet had decided to have quick communication by tramway.
369. Did he make that statement publicly before the sale took place? Yes.
370. That a tramway was to be built? A tramway—very quick conveyance to the place.
371. But did the auctioneer make any reference to a bridge over Tarban Creek? No; that I do not remember.
372. Suppose the Government construct this tramway to the Field of Mars, will you not then consider that they have complied with all their promises? I suppose it is what I understood at the time, but the bridge was promised to us long ago. I was Mayor at the time, and I came to Sydney and went to some expense to have soundings taken.
373. Have you not had sufficient experience of Ministers to know that a great many things are promised that are not performed? But I think that when a Minister promises a thing it should be performed.
374. You know that promises are generally made under the supposition that they will be carried out if convenient? Well, this bridge is very much needed to open up all that country, and afford communication right through with the North Shore.
375. With regard to the first sale at the Field of Mars, are you quite sure that Mr. Farnell, standing alongside the auctioneer, made that public announcement? Yes, I am positive of that.
376. Before the sale took place? I cannot say whether it was before or after the sale, but I clearly heard Mr. Farnell, standing close by the auctioneer's side, make that statement.
377. What did he say? He said "We will soon have communication to go through in 20 or 30 minutes from Sydney."
378. *Mr. Garrard.*] By road? I believe he meant a tramway.
379. *Mr. Copeland.*] Did he mention the word tramway? I believe he did.
380. What year was that in? I cannot remember. It was five or six years ago. I bought on that day over £3,000 worth of land.
381. *Mr. Garrard.*] Will you tell us the name of the auctioneer who was on the ground, and also the auctioneer who sold at his rooms? I cannot recollect the names.
382. Were the auctioneers Messrs. Mills and Pile? It was the stout gentleman, Mr. Pile.
383. Was he the auctioneer on both occasions? Both Mr. Mills and Mr. Pile were at the sale on the ground, and at that which took place at the auction room there was only Mr. Pile.
384. *Mr. O'Sullivan.*] When you gave £300 per acre for the land did you have much competition? Yes, there was competition. Of course, directly it was stated that we should have such quick communication, there was competition at once. I should not have bought so much but for that statement, as I already had plenty of land.
385. Was it the competition that forced you to pay the £300, or were you induced to do so by the prospect of getting a tramway? It was the prospect of the tramway that caused the competition.
386. You believe that the prospect of getting a tramway induced a brisk competition? Certainly; it induced me to compete at all events.

TUESDAY,

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TUESDAY, 11 *MARCH*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman.)

The Hon. John Lackey.	Jacob Garrard, Esq.
The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	John Hurley, Esq.

The Committee further considered the proposed Bridge over Tarban Creek, Parramatta River.

George Pile, Esq., auctioneer, sworn, and examined :—

G. Pile, Esq. 11 Mar., 1890.

387. *Mr. Copeland.*] I believe you were the auctioneer who sold the land at the Field of Mars on the occasion of the first sale. Yes.

388. Did you receive any instructions in writing from the Lands Department prior to the day of the sale? I do not recollect receiving any special written instructions beyond our appointment as the auctioneers for the sale.

389. Did you receive any authority in writing from the Department to make any statement with reference to the future intentions of the Government about spending the proceeds of the sale. No.

390. Did you at the time of the sale make any statement in a business way to the effect that the proceeds of the sale would be expended in constructing a tramway or in building bridges? No, neither verbally, nor in writing, did I make such a statement.

391. What statement did you make? At the first sale we, as auctioneers, made no promises on the ground, but promises were made in my hearing by the then Minister for Lands, Mr. Farnell.

392. Was that at the first or at the second sale? At the first sale. Mr. Farnell made this statement on the ground. We made no promises.

393. Did Mr. Farnell make the statement publicly, the same as you read out the conditions of sale? Mr. Farnell was surrounded by a number of friends and purchasers, and he told them in my hearing, not as to how he would expend the money, but that the Government would construct a tramway.

394. That was said merely in a conversational way? Yes.

395. It was not stated from the rostrum? No. But at the second sale we were authorized by the Department to promise a tramway

396. What was the date of the first sale? It was about 1885, I think, and the second sale was held in our rooms a few days afterwards.

397. The second sale was merely to sell the odd pieces, I suppose? Yes.

398. On that occasion you were instructed in writing by the Department to make this promise? Probably by the officers of the Department.

399. By whom? By a Mr. De Lowe.

400. He instructed you to state that the Government would build a tramway to the Field of Mars? I think it was at that sale. I was informed that there was a Cabinet meeting over the question.

401. I suppose you made the statement? We did at the time of the sale. At the first sale the only promise made was by the Minister for Lands himself.

402. Do you think the making of that promise induced any persons to purchase lots? Yes. The general question asked of us by numbers of purchasers at the sale was, "will there be a tramway constructed, because otherwise how are we going to get to this land?" and we said: "We will make no promises at all." In point of fact, at the commencement of that sale I made no speech whatever; I simply read the conditions of sale.

403. At the first sale? Yes.

404. But at a subsequent sale, on the authority of the Department, you stated publicly, as a condition of the sale, that a tramway would be made? Yes.

405. Are you sure it was Mr. De Lowe who authorized you to make the statement? He was the principal who instructed us, there were two other clerks. My memory is quite clear that the instruction was given by one of the officers of the department, and I think it was Mr. De Lowe.

406. *Mr. Trickett.*] Was Mr. Farnell's promise made at the outset or at the conclusion of the sale? The sale was a very long one, and at the end of three hours I got down from the rostrum, and my partner, Mr. Mills, took my place. I went over to speak to Mr. Farnell. I had to wait a little while before I could get an opportunity of saying anything to him. But I heard him promise distinctly to a number of people—at least half-a-dozen—that there would be a tramway, or that the Government would construct a tramway.

407. Had much of the property been sold then? A very large quantity.

408. The bulk of it? When I got down from the rostrum I suppose that fully one-half of the land submitted to auction had passed the hammer, one way or the other.

409. Would that be the greater part that would be benefitted by a tramway? I cannot say that. The lots are so irregularly arranged in numbers, jumping from one side to the other, that it is very difficult to say that.

410. If you do not remember who was the officer that gave the instructions to you, possibly you would remember when you received them—was it on the morning of the sale? It is such a long time ago that I cannot pretend to remember positively, but on the morning of the sale we were informed that there had been a Cabinet meeting, and we were authorised to announce that a tramway would be constructed to the Field of Mars, and we made the announcement.

411. Were many allotments sold at that sale? A considerable number.

412. *Mr. Garrard.*] For how long did Mr. Mills continue the sale after you left the rostrum on the first occasion? I got into my buggy almost at once and drove home as quickly as I could.

413. You don't know how much Mr. Mills sold that day. Did he sell as much as you did? About half as much in area.

414. Do you think that the making of this promise by Mr. Farnell had anything to do with the sales effected by him? I think so, for from what I subsequently heard, I think it had also with regard to a large

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large portion of the land which I sold. Mr Farnell was surrounded by a number of friends and admirers, and he was within twenty yards of the rostrum for a considerable time before I got down. G. Pile, Esq. 11 Mar., 1890.

415. So you have every reason to believe that Mr. Farnell made this promise some time prior to your getting down from the rostrum, and that it had a good deal to do with the success of your sale? I think that to a large extent the very high prices I got—three or four times the value—were due to the belief that there would be a tramway constructed to the ground.

416. *Mr. O'Sullivan.*] You said just now that when Mr. Farnell made this statement he was surrounded by a number of friends and purchasers? Admirers I said.

417. But you used the word "purchasers" in the first instance. Would not that imply that it was made after the land had been sold to them? I cannot pretend to say that. I only know that what he said was heard not only by those he was addressing, but by others who were standing near him.

418. Could his voice be heard above the voices of the bidders? I think it was pretty well understood by the crowd that Mr. Farnell had promised that there should be a tramway.

419. Had he been promising that all the time the sale was on? I think that for a considerable portion of the time he had made the statement and it was generally understood that he had.

420. *Mr. Copeland.*] It was "in the air," ? Yes, like federation is now.

421. *Mr. Humphery.*] Do you remember the amount realized at the second sale, at which a distinct promise was given? I cannot recollect the amount, but the total sum realized at these sales was somewhere about £57,000.

422. *Mr. Hurley.*] Can you give us any idea as to the value per acre of the lands still unsold in the whole of the Common? I should think it is worth from £15 to £20 an acre.

423. Do you think it would average that price right through? I think so from what I know of the land.

Mr. Robert Henry De Low, Officer-in-charge of the Miscellaneous and Alienation Branches in the Lands Department, sworn, and examined:—

424. *Mr. Copeland.*] What position do you occupy in the Lands Department? I am officer-in-charge of the Miscellaneous and Alienation Branches. Mr. R. H. De Low.

425. You held a similar position when the Field of Mars Common was sold by subdivision? I was in charge of the Alienation Branch at the first sale, and in charge of both branches at the second sale. 11 Mar., 1890.

426. Do you remember giving instructions to Mr. Pile, of the firm of Mills & Pile, to sell the allotments at the first sale? I recollect that instructions were given to him, and I take it that they would go through me—of course with the authority of my superior officer.

427. Do you remember the instructions which were given at the second sale? Yes.

428. Do you remember giving those instructions yourself? I believe I gave them myself.

429. Did you give any instruction with reference to the auctioneer announcing that the Government had decided to build a tramway to the common? I do not recollect positively giving that instruction, but I have every reason to believe that I did, because I find a Cabinet minute amongst the papers.

430. Will you read the minute? It reads as follows:—"Cabinet authorize the Minister for Lands to announce in connection with the sale of the Field of Mars Common that the Government intend to construct a tramway to that locality." It is initialled H.P., and dated 18th April, 1887.

431. The Parkes Government were in office at that time? Yes.

432. Who was Minister for Lands then? Mr. Garrett.

433. I suppose you conveyed that decision to the auctioneers? I have every reason to believe I did.

434. I suppose, as a matter of fact, that decision was arrived at with a view to induce persons to buy the land? I have every reason to believe so from the papers. The sale to which reference is made there—the second sale—was announced to take place at the rooms of Mills & Pile, on the 24th March, 1887. Mr. Garrett announced to the Legislative Assembly a day or two before the date of the sale that he had decided to postpone the sale in order to consider the fate of the Land Bill then before Parliament, and the route which the tramway should take to the Field of Mars. The sale was postponed and it took place on the 5th May, 1887.

435. *Mr. Garrard.*] What is the date of the first sale? Saturday, 26th September, 1885.

436. And there was a continuation sale—which has been referred to as the second sale—in Mills & Pile's rooms two or three days afterwards? On Wednesday, the 30th September, that is part and parcel of the first sale.

437. You speak of it as one sale? Yes.

438. Did you give any instructions with reference to that sale? None whatever.

439. Were you on the ground on the Saturday? I was.

440. Was Mr. Farnell present? Yes, he was not near the auctioneers but in the crowd at the back.

441. Did you hear him promise or say anything in connection with the construction of a tramway? No. I heard no promise whatever made by Mr. Farnell.

442. Who officiated as auctioneer? Mr. Pile started the sale, and Mr. Mills relieved him when I should say he was really worn out.

443. Was much land sold after Mr. Mills mounted the rostrum? Yes a fair quantity.

444. Half as much as Mr. Pile had previously sold? I am not in a position to say that.

445. Were you close to Mr. Farnell during the sale? No.

446. So that, without you hearing it, he might have stated, not to the auctioneers, but to the people round about him that a tramway was to be constructed? It was possible for him to do so.

447. In connection with the continuation sale was any instruction given to Mills & Pile about the construction of a tramway? None whatever that I know of.

448. They had no instructions in addition to what they had for the previous Saturday's sale? None whatever.

449. You are quite sure that none were given? Quite, because they would have come through me if they had been given.

450. The second sale took place on the 5th May, 1887, were you present on that occasion? I was.

451. Was any promise held out by the auctioneer, on behalf of the Government, with reference to a tramway? I believe Mr. Pile announced the contents of the minute which I have just read.

452. On the ground? In the rooms, in Pitt-street.

453. There was no continuation of that sale? No.

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Mr. R. H. De Low. 11 Mar., 1890.

454. Were you instructed by the Minister, or by your superior officer, to inform Mr. Pile of the contents of the minute? I was instructed to convey the terms of the minute to the firm.
455. Do you think that the publication of that minute had anything to do with the getting of the prices which were obtained at the second sale? I think it influenced the sale.
456. Very much? I am not prepared to say that.
457. It had an influence on the sale? That it had an influence I feel certain.
458. There have been no other sales since then in connection with this common? There have been sales since then of parts of the Field of Mars, more particularly those near the Homebush-Waratah line. The parts referred to in the minute are those which are known in the office as the Lane Cove parts of the common.
459. Have there been any auction sales of parts of the common near Ryde? No; but there have been sales of the parts situated at Beecroft and Carlingford.
460. Was any promise made then about expending the proceeds of the sale in improving the district? Not that I know of.
461. As a matter of fact large improvements—particularly the construction of roads—had been made before the sales took place? Yes, by the Government.
462. How much was realised at the first sale, in 1885, and at the sale in 1887? Speaking from memory I believe that the sale held on the 26th and 30th September realised £62,000. I am not in a position to say what was realised at the sale in 1887.
463. Can you state the amount approximately—was it more or less? Far less.
464. Whatever promise was made about the tramway would only apply to the sale on the 5th May, 1887? In my opinion it would apply only to that sale.
465. *Mr. O'Sullivan.*] Had you heard anything of this promise before the sale of 1887? I had heard it rumoured that the Government had promised at the sale, on the 26th September, 1885, that a tramway would be made. I had heard it as a matter of talk amongst citizens.
466. Did it come before you, as a public officer, having charge of that sale? No.
467. The first official notification you got of the promise was the Minute of 1887? Yes.
468. *Chairman.*] Will you supply a return, showing what was realised for each allotment at the different sales? Yes.
469. *Mr. Garrard.*] Can you state whether the sale on the 5th May, 1887, comprised parts of the Lane Cove portion of the common, the same as the sale of 1885 did? It comprised the lots unsold on the 26th September, 1885, and a few in the Homebush-Waratah part of the common.
470. The bulk of the sale was virtually the ground which was unsold in 1885? The greater part of it was.
471. *Mr. Copeland.*] At either of these sales was any reference made to building a bridge over Tarban Creek with the money? Not that I know of.
472. Do you know that the Department were in any way committed to the building of a bridge over this creek? Only so far as I was aware from the contents of the Field of Mars Resumption Act.
473. Does it contain any reference to that bridge? Not by name.
474. It refers to a bridge across the Parramatta River? Yes.
475. And that bridge was built. Yes.
476. There is no reference in it to a bridge over Tarban Creek? None whatever.
477. You are not aware of your Department being committed in any way to building a bridge over the creek? No.
478. *Mr. Garrard.*] Is there any record in the office of the conditions under which the commoners gave up this common to the Government—is there any correspondence from the commoners agreeing to give up the common on certain conditions? It is some time since I looked through the papers, but I am of opinion that there is a very old letter amongst the papers containing some expressions to the effect that the people up there gave up their common on condition that money should be spent in the district.
479. Did not the Field of Mars Resumption Act virtually embrace, and was it not accepted by the Commoners as a contract of the Government with them? I am not quite prepared to speak on that point. My view of the matter, from my official knowledge, is this; the common was resumed because it was nothing more or less than a piece of waste land at the time, and it was not right that it should remain so close to Sydney without there being any means of alienating or dealing with it.
480. *Mr. Copeland.*] There were a number of alienations of land round this common in the early days of the colony—have you ever seen a copy of any of the original grants? No.
481. Do you know whether any of those original grants conveyed any right of commonage to the Field of Mars Common? No.
482. How did these people come into the position that they were able to dictate to the Government or to offer any terms to the Government as to what was to be done with the proceeds of the sale of the common? I do not know.
483. Was not the position taken up by these commoners different from the position taken up with reference to any other common in the colony? I think not.
484. Do you know any other instance where commoners have had the proceeds of the sale of their common expended or promised to be expended in constructing a bridge or a tramway? I do not.
485. Would you not be able under the present law to resume this common without any necessity for a special Act of Parliament? I am inclined to think not, unless it can be clearly shown that the use for which it was granted has failed.
486. But when land is required for public purposes can it not be resumed in this way by laying a notice on the table of the Assembly for so many days, and then if no objection be taken to the proposed resumption within that time the notice has the force of law? The 105th Section of the Act of 1884 requires, according to the way I have been reading it that the purposes of the trust shall have failed.
487. Do you remember that a large common was resumed during 1886, when I was in office, somewhere near Windsor? Yes; the Wilberforce Common.
488. No special Act of Parliament was passed in the case of that common, and it was vested in trustees the same as the Field of Mars was, was it not? Yes.
489. Under the present law there would be no necessity to pass a special Act of Parliament, in order to resume the Field of Mars Common, it would be resumed under the Act of 1884? No. In the case of the Wilberforce Common we did issue a notice under the 105th section of the Act of 1884. We thought at the

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Mr. R. H. De Low. 11 Mar., 1890.

the time that the notice was effective, but shortly afterwards when the commoners called the whole action into question the Attorney-General gave it as his opinion that our notice under that section could in no way cut out the deed of grant, that the deed of grant having issued it must prevail, and therefore the action of the Department was all null and void.
490. Who gave that opinion? I do not remember at this moment.
491. Has not that common been resumed? No.
492. *Mr. Lackey.*] I suppose you know from the circumstances under which the commoners held the Field of Mars Common that their rights were given in the early days of the colony? Yes.
493. You have heard of the Eastern Farms? Yes.
494. They consisted of grants of land by deed of grant, or by purchase out in the Ryde district and that locality? Yes.
495. And as an inducement to people to purchase or reside there, and cultivate commonage was given over the Field of Mars Common, was that not so? I am not acquainted with the early details, because the office records do not help us in that respect. I rather take that to be the correct view, following the old English precedent as regards commoners' and villagers' rights.
496. Of course you know that the locality was one of the earliest settled agricultural places in Australia? Yes.
497. And that a great number of farmers settled there and were given grants in the early days of the colony owing to its contiguity to Sydney, and its adaptability for agricultural pursuits? Yes.
498. I think the Ham Common was granted about the same time under similar circumstances? Yes.
499. Pasturage rights were given to the Ham Common on the banks of the Hawkesbury in addition to whatever rights were conveyed by the grants of land; so that the commoners in each instance had an inherent right to the common, and the common could not be taken away from them under similar conditions to those under which reserves can be taken under the present law;—has that point occurred in the administration of commonage rights in the Lands Office? Not that I am aware of.
500. I suppose you do not recollect much of the early history of the Field of Mars Common? Only as regards some of the trespasses there, the greater number of them were rather encroachers than trespassers on the common owing to mistaken boundaries.
501. Are you aware that the commoners never agreed unanimously to any single act? No.
502. Are you are that a resolution or Bill was brought before Parliament in 1862 or 1863 to enable the Government to dispose of the common? I have seen either a resolution or a reference to the matter among the official papers.
503. It was brought forward by a commoner who was a member of the Assembly? I do not recollect the particulars.
504. Do you recollect the rights of commonage followed the issue of grants? I do not.
505. *Mr. Copeland.*] Did you ever know a Crown grant which did convey rights of commonage? I never knew of a case of that kind.
506. *Chairman.*] Under the "Field of Mars Resumption Act" the Government are required to carry the proceeds of the sale of this land to a separate account, are they not? Yes.
507. Has that been done? I have reason to believe it has been done in the Treasury books.

WEDNESDAY, 12 *MARCH*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. John Lackey,	Jacob Garrard, Esq.,
The Hon. Andrew Garran,	Henry Copeland, Esq.,
The Hon. Frederick Thomas Humphery.	Edward William O'Sullivan, Esq.,
The Hon. William Joseph Trickett,	John Hurley, Esq.

The Committee further considered the proposed bridge over Tarban Creek, Parramatta River.

Francis Kirkpatrick, Esq., Chief Inspector of Public Accounts, and Consulting Accountant, sworn, and examined:—

F. Kirkpatrick, Esq. 12 Mar., 1890.

508. *Chairman.*] What is your position in the Treasury? I am Chief Inspector of Public Accounts and Consulting Accountant.
509. You are aware that in 1874 an Act was passed to authorise the resumption and sale of the Field of Mars Common? Yes.
510. Provision was made in that Act by which the proceeds of the sale should be carried to a separate account from the Consolidated Revenue; has that been done? No. I might, perhaps, explain to the Committee that the authority is to carry the money "to the credit of a separate fund." That generally means a trust account; but the Act goes on to say "or account as part of the public revenue," consequently it was credited to the public revenue.
511. Has it been carried to a separate fund or account? No; it has been carried to the public revenue included in the heading—"Auction sales, Crown Lands."
512. Then you have no account in the Treasury which will separately show the proceeds of the sale of the land resumed under the Act? Not separately.
513. And the proceeds have been carried to the general revenue account under the heading of Auction Sales? Yes.
514. And no separate account has been kept? No.
515. When was the first sale? In September, 1885.
516. What were the proceeds of the sale? Perhaps it would be more satisfactory if I were to put in a statement showing the whole amount realised, although it has not yet all been received. The total amount we have received from the sales of 1885 is £61,473 15s. 11d.
517. When did the Act giving credit come into operation? In 1887.
518. Has the whole of the money been paid on account of the sales of 1885? Yes.
519. When was the next sale? In October, 1886; it realised £6,637 5s. 9d. 520.

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F. Kirkpatrick, Esq.

12 Mar., 1890.

520. What was the acreage at each sale? I have not that information with me. I should like to explain that in connection with the sales of 1885 and 1886 there were balances unpaid, the deposits having been forfeited to the extent of £2,737 16s., which would, of course, reduce the figures I have given to that extent.
521. Why? Because we shall not receive the amount.
522. That is the whole amount paid to the Treasury? No, payable to the Treasury.
523. When was the next sale? In May, 1887; it realized £1,915 7s. 7d.
524. The credit system came in then. What balances are due on those sales now? It was impossible for me to ascertain in the limited time I had to make up this statement.
525. You only know the amount you have received? The total amount of the sales.
526. *Mr. Copeland.*] The first sale in 1887 was held before the Deferred Payments Bill was passed? Yes.
527. They were all cash sales prior to that time? Yes.
528. I take it that you are getting your information from the Lands Department? No, it is taken from our own books in the Treasury.
529. *Chairman.*] But the information as to the sales and the cash payment would be furnished in the first instance by the Lands Department? Undoubtedly.
530. *Mr. Garrard.*] I understand that the first three sales were lump sums before the deferred payment system came in, and are subject only to those lapses which have been mentioned? Yes, to the extent of £2,737 16s.
531. *Chairman.*] When was the next sale held? On the 9th July, 1887, at Beecroft, it realized £3,851 15s.
532. Was that the cash paid on the total amount? As I understand it, it is the total amount of the sale.
533. When was the next sale? At Beecroft, on the 27th August; it realised £8,095.
534. Do you mean to say that in the Treasury you have no means of showing what money has been paid on each of those sales? Yes, we have, but it would take some little time to take it out.
535. You can get a return for the Committee giving this information? Yes.
536. Do you know what sum has been debited against these proceeds for the erection of bridges over the Parramatta River, or any other river up there? I could not say.
537. Are there no accounts in the Treasury to show that? We could make it out.
538. As a charge against the general revenue but not as against these particular proceeds? We have not got a separate account of these particular proceeds.
539. What is the explanation for not carrying these amounts to a separate account—it is public revenue? It is.
540. Does that do away with the obligation to keep a separate account as the Legislature has said you shall do; the assessments under the Sheep Act and Rabbit Act are treated as part of the public accounts, but separate accounts are kept for each of them? Yes, they are different accounts, they are both trust accounts.
541. Is not this? This is a revenue account.
542. Do you not see that the Legislature has said that you shall keep a separate account. What right has the Treasury officers to say they shall not? I do not know, unless perhaps they may have understood it to mean that it is to form part of the revenue as stated in this section.
543. Can you give any reason why the Treasury has said there shall not be a separate account kept as this Act provides? I cannot give any reason except that it has not been done.
544. You have treated the proceeds as part of the public revenue, and carried them generally to the account under the head of auction sales? Just so.
545. *Mr. Copeland.*] Have you any separate account for the Church and School Lands? Yes.
546. Are the proceeds from these lands kept in a separate account? That is a trust account.
547. And it is kept separately? Entirely.
548. Still the proceeds are treated as revenue? At the end of the year the amount which is over and above what is required, is transferred to the consolidated revenue. It goes into the general revenue at the end of the year.
549. It is merely kept separately so as to comply with the Church and School Lands Act? Yes; and, furthermore, the expenditure all through the year is charged to the receipts of the year, and at the end of the year the balance is transferred to the consolidated revenue.
550. Was there anything to prevent you giving effect to this Act any more than there is to the Church and Schools Land Act, could you not have kept this account separately, the same as you have kept other accounts? The Church and School Lands account is not kept separately under revenue, it is kept separately as a trust fund; but the proceeds of the sale of the Field of Mars the law directs should be kept as part of the public revenue. There seems to have been some misunderstanding in that respect.
551. The Church and School Lands account is a separate and distinct account by itself? Yes.
552. No funds from any source except from the Church and School Lands are paid into that account? That is quite correct.
553. Is there any accountant's reason why these funds should not have been treated in exactly the same way as the Church and School Lands fund? No, with the exception, that the Act says it is to form part of the public revenue.
554. Does not the money from the Church and School Lands form part of the public revenue at the end of the year? Yes; the balance over and above what is required is transferred at the end of the year.
555. I suppose you are aware that the Act provides that the money shall be kept in a separate account, and that the proceeds shall be devoted towards building a bridge over the river? I am aware that the Act provides the funds shall be kept in a separate account. With reference to the appropriation, I think that it is a matter for Parliament, as the Act says that the proceeds of the sale "may" be applied—not "shall" be applied.
556. If I understand you aright the land sales at the Field of Mars realized a total of over £81,970? As a matter of fact, the total sales amount to £95,938 7s. 6d. less £2,737 16s., being the amount of the balances unpaid, the deposits having been forfeited.
557. There were other sales then? On the 10th March, 1888, there was a sale at Beecroft realizing £4,360 10s.; on 30th November, 1889, one at Carlingford, realizing £6,121 12s. 1d.; on the 7th December, one at Beecroft, realizing £2,153 10s.; and on the 19th December, one at the Field of Mars, realizing £1,329 11s. 2d.

558.

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F. Kirkpatrick, Esq. 12 Mar., 1890.

558. There has been no special appropriation from that fund? I can scarcely answer your question, as the revenue is treated as a whole.
559. There has been no special appropriation from these particular proceeds? Not that I am aware of.
560. Can you state from what source the funds were provided for building the bridge over the Parramatta River? No, not at this moment.
561. At any rate, you can tell us that the money was not specially appropriated from the proceeds of these land sales? No, no separate account was kept of them.
562. Can you state the cost of the bridge over the Parramatta River, and of the bridge over Iron Cove? No; I have not looked up these matters.
563. *Chairman.*] Will you supply a return showing the cost of each bridge, and whether the money came from the general revenue or from the loan funds? I will obtain the information for the Committee.

APPENDIX.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Bridge over Tarban Creek, Parramatta River.

APPENDIX.

A.

PRECIS OF PAPERS RELATING TO THE PROPOSED BRIDGE OVER TARBAN CREEK, PARRAMATTA RIVER.

THE papers in this case, as submitted, are very meagre, and are evidently incomplete. It is admitted that there are other papers, and efforts are being made to recover them from the Lands Department (Surveyor-General's Branch). The following is the case as disclosed by the available papers :—

18/9/83.—Mr. Rothwell, in compliance with instructions, submitted section, &c. of Tarban Creek, and estimated the cost of a bridge of one span of 450 feet, or three spans of 150 feet, at £30,000, without approaches.

21/1/84.—The same officer submitted an estimate for a bridge of five spans of 100 feet each—amount, £24,048—stating that that span was the most economical that could be adopted.

7/7/85.—In accordance with a resolution of the Borough Council of North Willoughby, the Mayor addressed the Minister, urging that the Tarban Creek bridge might be constructed as speedily as possible to complete the communication between Sydney and Lane Cove.

Mr. Bennett minuted that a bridge here would cost £18,000, and would shorten the distance from Sydney to the North Shore by 1¼ mile. It was with a view to this bridge that the site of the Lane Cove bridge was changed to Figtree.

16/7/85.—The Mayor of Hunter's Hill addressed the Minister, urging the same point, and was informed, in reply, that favourable consideration would be given to the matter.

17/9/88.—Mr. F. Farnell, M.P. wrote to the Minister, expressing a hope that the Government would, without delay, carry out this "desirable and necessary" work.

Mr. Bennett minuted that, doubtless, a bridge would shorten the distance—at a cost of £18,000—and that a bridge *must* be built some day.

1889.—Mr. Secretary Bruce Smith minuted that this bridge was intended to complete the line of communication by the shortest route between the Parramatta iron bridge and the bridge over Lane Cove, giving access to the North Shore, and that it would save 1½ mile.

An amount of £24,000 was placed on the Draft Loan Estimates for this bridge, of which the following is the official account :—"This will either be an arch, in steel, of 370 feet span, with steel approaches, or iron lattice bridge, 600 feet long, on iron piers. Until borings are taken the most economical of the two designs cannot be ascertained."

This bridge was referred for the consideration and report of the Public Works Committee.

10/2/90.—Mr. Hickson minuted that he was of opinion that Tarban Creek Bridge should be withdrawn from the Committee, as it could be constructed for less than £20,000; and, in any case, further investigation was necessary as to whether *any* expenditure was justifiable in this case.

The Minister directed to withdraw all the iron bridges, except Cowra, and to explain to the Committee.

C. A. B., 17/2/90.

B.

EXTRACT FROM MINUTE PAPER BY THE COMMISSIONER AND ENGINEER-IN-CHIEF FOR ROADS AND BRIDGES TO THE UNDER SECRETARY FOR PUBLIC WORKS, &C.

"JERRY'S Plains and Tarban Creek Bridges should also be withdrawn, as they can be erected for an amount under £20,000, and in any case further investigation is necessary as to whether any expenditure at these places is justifiable."

C.

LETTER FROM THE UNDER SECRETARY FOR PUBLIC WORKS PROPOSING THE WITHDRAWAL OF THE BRIDGE FROM INQUIRY.

Sir, Public Works Department, Sydney, 25 February, 1890.

With reference to the three proposals for construction of bridges, viz., at Tarban Creek, Jerry's Plains, and Bullock Island, which are now before your Honorable Committee, I would desire to point out that when I appeared before the Committee in regard to these matters I asked, on behalf of the Minister, that the proposals might be negatived, on the ground that since the introduction by him of a new system of dealing with bridges, it had been ascertained that these particular works could be carried out for a very much less sum than that submitted to Parliament as the estimated cost.

The Minister now learns that the professional officers of the Department, and especially the Commissioner for Roads, have given evidence to the effect that there is no necessity at all for these works, and I have therefore to point out that the evidence upon which the Minister determined to submit the proposals to Parliament was that of the late Commissioner for Roads, who was then the official adviser of the Government on such matters. As, however, the Minister finds that the present Commissioner holds opinions differing from those of his predecessor, he is desirous of reviewing the matters not only from the standpoint of cost, but also from the more radical one of necessity; and I have therefore to ask on these further grounds that the proposals may be negatived.

I have, &c.,
J. BARLING.
Under Secretary.

J. P. Abbott, Esq., M.P., Chairman of the Public Works Committee.

D.

[*To Evidence of Mr. R. H. De Low.*]

STATEMENT SHOWING THE NUMBER OF LOTS AND AREA SOLD, AND THE AMOUNT REALIZED, ON ACCOUNT OF SALES OF CROWN LAND, IN THE YEARS SPECIFIED, UPON THE FIELD OF MARS, AT HUNTER'S HILL.

Date of sale.	Number of lots.	Area.	Realized.
1885.		a. r. p.	£ s. d.
26 and 30 September	212	495 3 0	57,808 3 4
21 October	17	36 4 0	3,615 7 6
	229	532 3 0	61,423 10 10
1887.			
5 May	59	45 1 3	1,915 7 7

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E.

[To Evidence of F. Kirkpatrick, Esq.]

STATEMENT SHOWING THE AMOUNTS REALIZED BY SALE OF LAND UNDER "FIELD OF MARS RESUMPTION ACT OF 1874," 38 VIC. No. 3.

Date of sale.	Place of sale.	Amount the land was sold for.	Amount paid.	Amount owing to date.
1885.		£ s. d.	£ s. d.	£ s. d.
26 September	Field of Mars	49,329 16 11	47,064 19 7	*2,264 17 4
30 ,,	,, ,,	8,523 18 6	8,194 13 0	*329 5 6
21 October	,, ,,	3,620 0 6	3,620 0 6	
1886.				
2 October	,, ,,	4,053 6 7	3,993 17 4	*59 9 3
16 ,,	,, ,,	2,583 19 2	2,499 15 3	*84 3 11
1887.				
5 May	,, ,,	1,915 7 7	1,915 7 7	
9 July	Beecroft	3,851 15 0	3,566 8 0	285 7 0
27 August	,,	8,095 0 0	7,458 19 0	636 1 0
1888.				
10 March	,,	4,360 10 0	3,424 13 4	935 16 8
1889.				
30 November	Carlingford	6,121 12 1	2,336 11 9	3,785 0 4
7 December	Beecroft	2,153 10 0	1,299 0 0	854 10 0
19 ,,	Field of Mars	1,329 11 2	333 8 2	996 3 0
	Totals	95,938 7 6	85,707 13 6	10,230 14 0

NOTE.—The sums marked * (amounting to £2,737 16s.) will not be paid—deposits forfeited and sale annulled. Sales from 9 July (inclusive) under "Auction Balances Act," 50 Vic. No. 39. Terms: 25 per cent. deposit; balance, three equal annual instalments with 5 per cent. interest added.

The Treasury, 11 March, 1890. W. NEWCOMBE, Receiver.

E 1.

STATEMENT SHOWING THE AMOUNT VOTED, EXPENDED, AND THE BALANCE UNEXPENDED ON ACCOUNT OF THE BRIDGES OVER THE PARRAMATTA RIVER AND IRON COVE CREEK, EXCLUSIVE OF THE RAILWAY BRIDGE.

Year of Vote.	Act.	Particulars.	Amount Voted.	Amount Expended.	Balance.
			£	£ s. d.	£ s. d.
1873..	Loan—36 Vic. No. 21 ..	Bridges over Parramatta River at Five Dock, and at Iron Cove Creek (the money to be expended on condition of the Field of Mars Common, about 6,235 acres, being resumed by the Government under Act of Parliament.	50,000	50,000 0 0	Nil.
1876...	Loan—40 Vic. No. 12 ...	Bridges over Iron Cove Creek and Parramatta River—further sum.	40,000	40,000 0 0	Nil.
1882...	Consolidated Revenue Fund—45 Vic. No. 21.	Bridges, Parramatta and Iron Cove, including embanked approaches—further sum.	9,000	8,996 17 5	3 2 7 Written off.

The Treasury, New South Wales, 13th March, 1890. J. PEARSON, Accountant.

F.

FIELD OF MARS COMMON RESUMPTION.

An Act to authorize the Resumption and Sale of the Field of Mars Common. [Assented to, 25th June, 1874.]

38 VICTORIA. No. 3. Preamble.

WHEREAS by a certain instrument bearing date the eleventh day of August in the year one thousand eight hundred and four under the seal of the territory of New South Wales and under the hand of His Excellency Philip Gidley King Esquire then Captain General and Governor-in-Chief of the said territory the lands hereinafter in the Schedule hereto described were allotted as Common lands for the use of the settlers cultivators and other inhabitants of the district of the Field of Mars and Eastern Farms in the County of Cumberland in the Colony of New South Wales. And whereas by a deed of grant under the Great Seal of the said Colony bearing date the tenth day of November one thousand eight hundred and forty-nine it was amongst other things recited that the said first-recited instrument was deemed insufficient in law for the purpose of securing and regulating the right of Common intended to be thereby granted And it was further recited that by a certain Act of the Governor and Legislative Council of New South Wales passed in the eleventh year of the reign of Her present Majesty intituled "*An Act to enable Trustees of Commons in New South Wales to have perpetual succession and to empower them to regulate the use of such lands as may be granted as Commons within the said Colony and for other purposes relating thereto*" certain provisions were made for the purposes in the title to the said Act mentioned And whereas by the said lastly-recited deed of grant the lands therein particularly described (being the lands also described in the Schedule hereto) were given and granted unto the Reverend George Edward Turner Duncan Mackellar and James Devlin and their successors to be appointed as in and by the said Act provided as trustees of the Field of Mars Common situated in the district formerly known as the Field of Mars and Eastern Farms upon the trusts and subject to the reservations and conditions thereinafter in such deed of grant expressed And whereas the said Act of the eleventh year of Her present Majesty was repealed by an Act passed in the thirty-sixth year of Her Majesty's reign and numbered twenty-three being the "Commons Regulation Act of 1873" and other provisions for the incorporation of trustees and the regulation of Commons have amongst other things been thereby enacted but no provision has been made for the surrender or resumption of Common Lands And whereas it is deemed expedient that the lands included in such grant as aforesaid and known as the Field of Mars Common shall be resumed by the Crown free from all trusts affecting the same in order that such lands may be sold and that the proceeds of the sale thereof may be devoted towards defraying the cost of a bridge suitable for general traffic intended to be constructed by the Governor with the advice of the Executive Council across the Parramatta River at some point to be hereafter determined by the Governor with the said advice Be it therefore enacted by the Queen's Most Excellent Majesty by and with the advice and consent of the Legislative Council and Legislative Assembly of New South Wales in Parliament assembled and by the authority of the same as follows:—

Resumption of Field of Mars Common.

1. From and after the day of the passing of this Act the land described in the Schedule hereto being the land known as the Field of Mars Common together with the fee-simple and inheritance thereof is hereby declared to be resumed by and to be vested in Her Majesty her heirs and successors absolutely free from all trusts conditions reservations rights-of-way easements and other rights whatsoever.

2.

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Land to be surveyed &c.

2. It shall be lawful for the Governor with the advice of the Executive Council to cause a survey and plan of the said land so resumed to be made in which plan shall be marked out such roads streets public thoroughfares and other reserves for public purposes and also such subdivisions or allotments of the said land for the purposes of sale as the Governor with the said advice may think proper to reserve or make. And such plan when completed shall be open for inspection without fee at all reasonable hours at the office of the Secretary for Lands and at such other places as he may appoint.

Sale of land resumed.

3. The land so resumed as aforesaid shall at such times (not being less than one calendar month after the completion of the said plan) and at such places as may be appointed by the Secretary for Lands be put up for sale by public auction. And fourteen days notice at the least of every such sale shall be given by publication in the *Gazette* And in such notice the allotments to be sold shall be designated in accordance with the said plan And the Crown shall have all powers of sale and grant in respect of such lands as are incident by law to the sale of Crown lands and the proceeds of every such sale (after deducting therefrom any costs or charges incurred therein) shall be paid to the Colonial Treasurer and by him be carried to the credit of a separate fund or account as part of the Public Revenue.

Short title.

4. This Act may be cited as the "Field of Mars Common Resumption Act of 1874."

SCHEDULE.

ALL that piece or parcel of land situate in the county of Cumberland parishes of South Colah the Field of **Mars** and Hunter's Hill containing six thousand two hundred and thirty-five acres Bounded first by the north side-line of Haynes' thirty acres in the parish of Hunter's Hill commencing at a marked rock on Lane Cove River being the north-east corner of the said thirty acres and bearing south seventy-four degrees forty-five minutes west then by the north side-line of Everard's thirty acres bearing west nineteen degrees forty-five minutes north then by part of the east side-line of Sarah Field's sixty acres bearing north nineteen degrees forty-five minutes east then by the north side-line of the said sixty acres bearing west nineteen degrees forty-five minutes north then by part of the west side-line of the said sixty acres bearing south nineteen degrees forty-five minutes west by the north side-line of Tyrrell's thirty acres bearing west thirty-one degrees forty-five minutes north then by part of the east side-line of Raven's two hundred and eighty-five acres bearing north thirty-one degrees forty-five minutes east then by the north side-line of the grants to Raven Morrison Hatton and by part of the north side-line of Lawrel's thirty acres bearing west thirty-one degrees forty-five minutes north then by the east side-line of Small's thirty acres bearing north thirty-one degrees forty-five minutes east then by part of the south side-line of Brown's one hundred and fifty acres bearing east thirty-one degrees forty-five minutes south then by east side-line of Brown's one hundred and fifty acres bearing north thirty-one degrees forty-five minutes east then by part of the south side-line of Connor's one hundred and forty acres bearing east thirty-one degrees forty-five minutes south then by the east side-line of Connor's one hundred and forty acres bearing north thirty-one degrees forty-five minutes east then by the north side-lines of the grants to Connor's and Weaver's bearing west thirty-one degrees forty-five minutes north then by part of the east side-line of Kent's five hundred and seventy acres bearing north thirty-one degrees forty-five minutes east then by the north side-line of the said five hundred and seventy acres bearing west thirty-one degrees forty-five minutes north then by the west side-line of the said five hundred and seventy acres bearing south thirty-one degrees forty-five minutes west then by the north-east side-line of Moore's grant bearing north thirty-two degrees twenty minutes west then by the north-west side-line of Brabyn's two hundred acres bearing west thirty-eight degrees ten minutes south then by the north-west side-line of Harding's twenty-five acres bearing west twenty-four degrees ten minutes south then by a reserved road of one chain width dividing it from the grants of Kent's one hundred and seventy acres and four hundred and sixty acres bearing north twenty-four degrees ten minutes west to a creek then by that creek bearing north and westerly (being the northern boundary of Kent's four hundred and sixty acres and some Crown land) to Rowland Hassel's one hundred acres then by a part of the north-east side-line of the said one hundred acres bearing north twenty-one degrees west then by a part of the south-east side-line of Savage's two hundred and ninety acres bearing east twenty-one degrees north then by the north east side-line of the grants to Savage Russell and by a part of the north-east side-line of Pincham's fifty acres bearing north twenty-one degrees west then by a line bearing east twenty-five degrees forty-five minutes south to the Lane Cove River and by that river bearing easterly and southerly to the aforesaid marked rock advertised as number four in the Government notice dated the twenty-ninth day of August one thousand eight hundred and forty-eight.

[One plan.]

Sydney: Charles Potter, Government Printer.—1890

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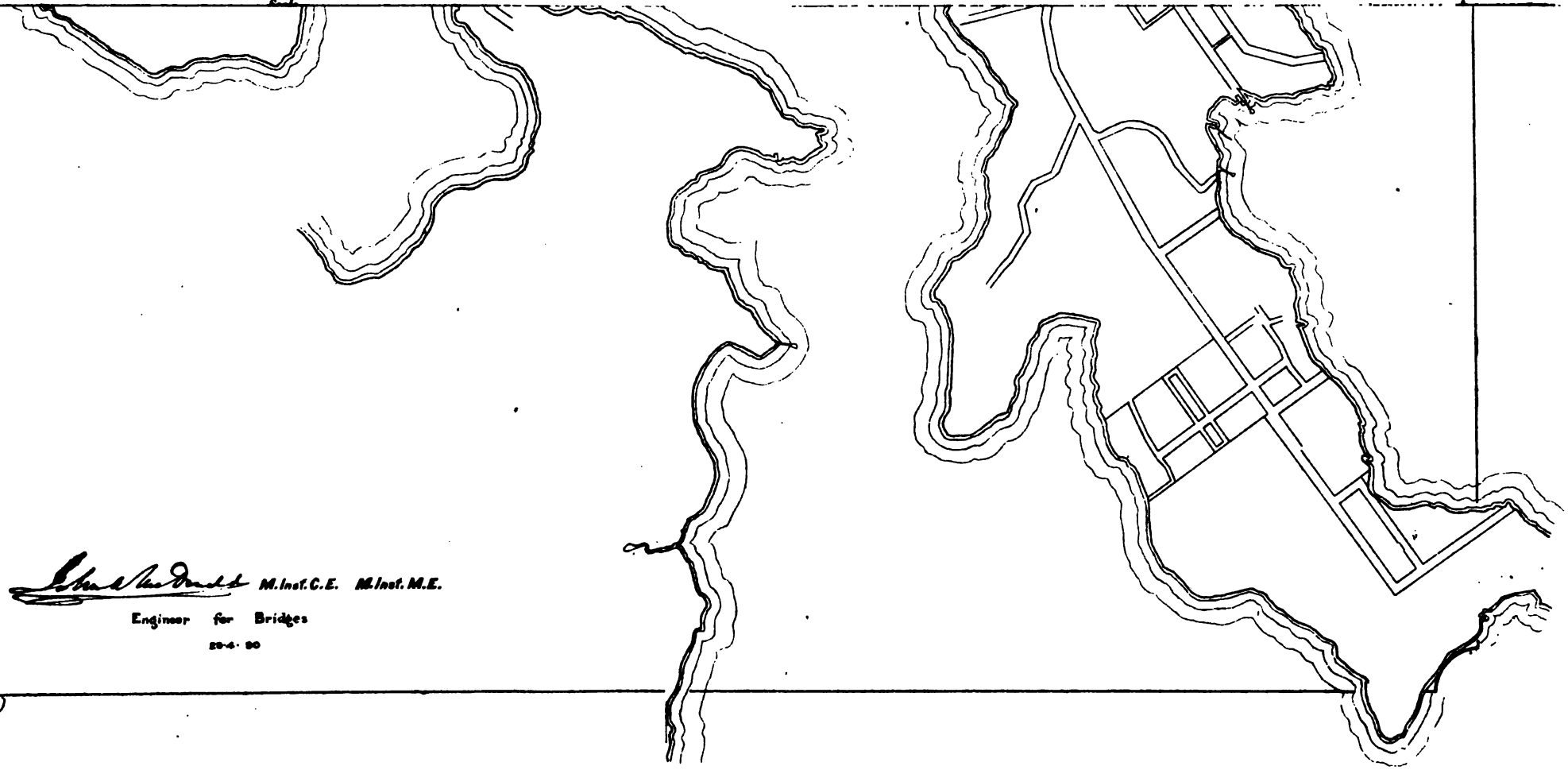
PLAN OF BRIDGE SITES
AT
PARRAMATTA RIVER LANE COVE RIVER
AND
TARBON CREEK

Robt Hickson M.Inst.C.E.
Commissioner and Engineer in Chief
for Roads and Bridges
20.8.90



Edward MacDonald M.Inst.C.E. M.Inst.M.E.
Engineer for Bridges
20.4.90

(Sig 57.)

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1890.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLAN,

RELATING TO THE

PROPOSED BRIDGE

OVER THE

HUNTER RIVER AT JERRY'S PLAINS.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37, section 8.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

[2s. 3d.] 61—a 1890.

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The Honorable FREDERICK THOMAS HUMPHERY.
The Honorable WILLIAM JOSEPH TRICKETT.
The Honorable GEORGE HENRY COX.

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EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN HURLEY, Esquire.
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The Honorable ANDREW GARRAN, Chairman.
The Honorable WILLIAM JOSEPH TRICKETT.
EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN HURLEY, Esquire.

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PLAN.

Plan showing site of Bridge over Hunter River at Jerry's Plains.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

BRIDGE OVER THE HUNTER RIVER AT JERRY'S PLAINS.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the first Session of the present Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, and the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, to whom was referred the duty of considering and reporting upon the expediency of "constructing a bridge over the Hunter River at Jerry's Plains," have, after due inquiry, resolved that it is not expedient the proposed bridge should be constructed, and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resclution to the Legislative Assembly :—

Description of the proposed bridge.

1. The information regarding the proposed bridge, as it was placed before the Committee, is somewhat meagre and contradictory, but the object in proposing the work was that the structure should replace at Gee's Crossing on the Hunter River, at Jerry's Plains, a low-level bridge washed away by flood from another crossing-place on the river, known as Bowman's Crossing, and also to give the west side of the river access to the Great Northern Railway at Liddell. The bridge, as far as can be ascertained from the papers in the case, was to be an iron continuous girder bridge 560 feet long, with timber deck roadway of 18 feet, the piers to be iron and filled with concrete, and it was to cost £20,000.

The Committee's inquiry.

2. At the opening of the inquiry, the Under Secretary for Public Works expressed to the Committee the desire of the Minister for Works that the proposal should be withdrawn, on the ground that it had been ascertained the bridge could be erected for a sum less than £20,000, a circumstance which would make it unnecessary for the work to be inquired into by the Committee. The bridge having, however, been referred to the Committee by the Legislative Assembly, the inquiry was unavoidable, and it proceeded, with the probability, at the commencement, of the proposal being reported against for the reason put forward by the Under Secretary for Public Works. Then came evidence from responsible officers of the Roads and Bridges Department which, while it strongly advocated a cheaper bridge than the one proposed, appeared to raise a doubt whether any bridge at all was required; and the inquiry had no sooner reached this point than representations were made to the Committee by residents of Jerry's Plains, questioning the accuracy of the information upon which the officers of the Works Department had given their evidence, and urging the construction of the bridge as at first proposed. In this position of matters the Committee saw no course to take but to appoint a Sectional Committee to visit the district and take the evidence of local witnesses. This was done, with the result that the Committee have decided to negative the proposal for the construction of a bridge at a cost of £20,000, their decision being based on the evidence of the departmental officers and of local residents that a cheaper bridge could be constructed, and that the cheaper bridge would be adequate for the wants of the district.

3.

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Circumstances connected with the proposal.

3. The proposal to erect this bridge was made in the first instance with the object of meeting the requirements of the stock traffic of the district; but since railway communication between Sydney and Newcastle has been established, much of the northern stock traffic has been conducted by railway, and this circumstance led the present Commissioner and Engineer-in-Chief for Roads and Bridges to doubt whether the bridge was required, and to decide that at any rate it was not desirable to erect a bridge of a costly character. When the present Commissioner took charge of the Roads and Bridges Department he found that considerable difference of opinion existed in regard to the bridge. It was not definitely known where it was best the bridge should be put—whether it should be erected at Jerry's Plains, or further up or down the river; and it appeared doubtful whether it should be erected at all. In this uncertainty, the Engineer for Roads and the Engineer for Bridges were sent to the locality, and the former wrote a report, which was to the effect that the stock traffic being very different now from what it had been, the bulk of it going by railway, the proposed bridge was not necessary. Upon this the Commissioner advised that the proposal for the erection of the bridge should be withdrawn, he having come to the conclusion that if any bridge were constructed it should be cheaper than the one proposed, and that in any case further investigation was necessary to determine whether any expenditure at all was justifiable.

Evidence of local residents.

4. The local residents say the stock traffic at the present time is much greater than represented in the official report, and is such as to make a bridge necessary; but according to the evidence given before the Sectional Committee the general opinion among those interested is that a structure considerably less expensive than the one submitted to the Committee would be sufficient to meet requirements.

Decision of the Committee.

5. From all the circumstances of the case, the Committee have arrived at the conclusion that a cheaper bridge than the one proposed might with advantage be erected. The district is one of importance; the main stock-road from the north and north-west to Richmond and Sydney passes through it; and a bridge over the river at Gee's Crossing, though not absolutely necessary, would be a great convenience. The Sectional Committee, as will be seen from their report, were of opinion that a suitable bridge might be erected for £10,000; but the opinion of the Commissioner is that it would not be advisable to construct a bridge of a kind that would cost less than £15,000. The Committee took the report of the Sectional Committee and the evidence before both the Committee and the Sectional Committee into consideration on Wednesday, 19th March, and again on Tuesday, 1st April; and the following is the record in the Minutes of Proceedings of the resolution adopted :—

On Wednesday, 19th March :—

Dr. Garran moved—

"That in the opinion of the Committee it is not expedient that the proposed Bridge over the Hunter River at Jerry's Plains, at a cost of 20,000, as referred to the Committee by the Legislative Assembly, be carried out."

Mr. Trickett seconded the motion.

Mr. O'Sullivan moved—

"That the motion be amended by the addition of the words—'but they recommend the erection of a high-level bridge at Gee's Crossing, in the same locality, at a cost not exceeding £15,000.'"

On the motion of Mr. Garrard, seconded by Mr. Dowel, the further consideration of the motion and the amendment was adjourned.

On Tuesday, 1st April :—

Dr. Garran moved the following amended motion :—

"That, in the opinion of the Committee, it is not expedient that the proposed Bridge over the Hunter River at Jerry's Plains, at a cost of £20,000, as referred to the Committee by the Legislative Assembly, be carried out, inasmuch as the Departmental Officers report that a cheaper bridge could be constructed that would be adequate for the wants of the district."

The motion was seconded by Mr. O'Sullivan (whose amendment, previously moved, was withdrawn), and passed.

J. P. ABBOTT,

Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 15 April, 1890.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

BRIDGE OVER THE HUNTER RIVER AT JERRY'S PLAINS.

THURSDAY, 20 *FEBRUARY*, 1890.

Present:—

The Honorable JOHN LACKEY (Vice-Chairman).

The Hon. Andrew Garran.	James Ebenezer Tonkin, Esq.
The Hon. Frederick Thomas Humphery.	William Springthorpe Dowel, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.
Jacob Garrard, Esq.	John Hurley, Esq.
Henry Copeland, Esq.	Charles Alfred Lee, Esq.

The Committee proceeded to consider the proposed Bridge over the Hunter River at Jerry's Plains.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, sworn, and examined:—

R. Hickson, Esq. 20 Feb., 1890.

1. *Vice-Chairman.*] You know the proposal to construct a bridge over the Hunter River at Jerry's Plains? Yes.
2. You have been examined by the Committee with reference to the proposal to construct a bridge over Tarban Creek? Yes.
3. For similar reasons to those which you gave why that bridge should not be constructed you recommend the withdrawal of this proposal? Yes—to some extent similar reasons.
4. Are there any other reasons which you would like to add? This case is not quite on all fours with the other. When I took charge of the Department I found a considerable difference of opinion existed, first as to where this bridge should be put; whether it should be erected at Jerry's Plains or further up or down the river; and secondly, as to whether it should be erected at all, and I did not feel justified in going on with the plans until I obtained some further reports. Accordingly I instructed Colonel Wells and Mr. M'Donald to go up and examine the place carefully and submit a report. Colonel Wells submitted a report, which has been laid on the table here, and as I do not know the place myself very well—I have been there, but a great many years ago—I would suggest that Colonel Wells be asked to give evidence. I can say very little, except that, judging from the reports I received, I did not think it was desirable to go on with such a costly bridge.
5. Under these circumstances you wish to withdraw the proposal before the Committee? Yes. Perhaps I ought to say that the circumstances which led to the proposal in the first instance are totally altered now. At that time the Northern Line was not connected with Sydney, and there was a very heavy traffic at this place which warranted the expenditure, but that has nearly all ceased now.

Colonel Frederick Wells, Engineer for Roads, sworn, and examined:—

[*The Report made by witness with reference to the proposal to construct a bridge at Jerry's Plains was read by the Secretary.*]

Col. F. Wells. 20 Feb., 1890.

6. *Dr. Garran.*] At what places are the two bridges to which you refer in your report that were washed away? One was at Denman, and the other at Bowman's crossing.
7. How much did they cost to construct? I can scarcely tell you now. They were low-level bridges, and not very costly.
8. Where do you propose to construct this bridge? At Gee's crossing.
9. That is the nearest point to Jerry's Plains? Yes; the nearest available point.
10. When these two bridges were in existence were they much used for stock purposes? Yes.
11. At that time stock went by the Bulga Road? Yes, and a good many went by Sir Thomas Mitchell's route and crossed at Alford's. They made straight tracks for the Cockfighter Bridge at Warkworth.
12. The whole of that traffic has now ceased? It has very much diminished.
13. It consisted of cattle from the far north, not of cattle in the district? Yes, of cattle from the Company's herds, I imagine, and cattle down the Goulburn and through Merriwa.
14. At that time both these crossings were high roads? Main stock routes.

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Col. F. Wells. 20 Feb., 1890.

15. The demand for bridges for high road traffic has ceased? Almost, at this locality.
16. The demand now is for local traffic? Yes, more than for stock. I judge by my local observations of the tracks upon the old travelled stock route, which I have known for years. It used to be travelled considerably; but there was not a hoof-mark on Sir Thomas Mitchell's line, and on the other, by Jerry's Plains, there was scarcely any evidence of cattle traffic.
17. Very little ever goes down the Bulga-road now? There is traffic still; but I do not think that it can be so much as it was, judging from what I saw at Jerry's Plains, and from what I heard when there. I have another paper here, which I wrote after making an inquiry in Sydney with regard to the stock. [*Read by the Secretary*]. I may mention that Alford is the proprietor of the land through which Sir Thomas Mitchell's line goes.
18. Is there a ford at Bowman's crossing? Yes.
19. Passable except in flood? Yes.
20. Are there fords at Gee's crossing and at Denman passable except in flood? Yes. There is also a bridge at Denman—not at the same place, but still available for stock traffic.
21. What is the nearest township for the residents on the north side of the river when they cannot get across? Do you mean at Denman?
22. Yes? They go to Muswellbrook.
23. They have an accessible road in all weathers? Yes.
24. The settlers on the south can go to Jerry's Plains, Warkworth, and Singleton? There are no settlers there. The land is held in large estates.
25. But can the holders on the large estates get a dry road? They would go to Liddel.
26. But can they get to a township? Yes.
27. As things are no one could be cut off from communication? No.
28. Then it is purely for local convenience that they want a bridge to go backwards and forwards? Practically so.
29. They can get backwards and forwards at any time except for the few days during which a flood lasts? They can.
30. The bridge that it is proposed to build will be a low level one? No; it must be a high-level bridge.
31. You would not recommend us to go in for cheap low-level bridges? Decidedly not.
32. You think that our experience on the whole has been against them? Everywhere.
33. The bridge at Richmond has answered? Yes, but it was built under somewhat different circumstances.
34. Does less timber come down there? Less timber would come down the Nepean, and the bridge is a very strong one, with a better holding than could be got here. The bed of the Hunter is very loose.
35. The Richmond bridge is built on rock? No; on good sound hard driving.
36. Do you know what it cost? I forget; but it was something enormous. I believe it cost, from first to last, nearly £20,000.
37. It was constructed at first by private enterprise? Yes.
38. What is the difference in the height between a low-level bridge and one built above the highest flood? It would depend upon the height of the flood. I could not say without seeing the sections.
39. The extra expense would be in the piers? Not alone. A low-level bridge would land between the banks, while a high-level bridge would need approaches and spans, and would be longer in every way.
40. Then you get extra expense on every account in a high-level bridge—more in piers, spans, approaches, and in everything else? Yes.
41. Do you think that at Gee's crossing a high-level bridge could be made for £10,000? I think it could in timber of the olden style. In the way that I used to estimate bridges, when they were under my own design and construction, I think that it could be carried out for less than £10,000; but in the improved style which has been brought in by Mr. M'Donald it would cost more than that—it would have a wider roadway, for instance. With such a bridge as I put over the Williams River at Dungog it could be done for the money I state.
42. What would be the life of a timber bridge? I believe a timber bridge could be made to last forty years.
43. What would be the weakest part of the bridge? Its liability to decay, and the attacks of the white ants.
44. Would the part under water be weaker than the rest of the structure? No. In fresh water wood will stand a long time.
45. You do not think that the piles will be weaker than the top work? I do not think so. Our experience is that the piers, if properly cared for, will outlast the superstructure.
46. Do you ever soak the piers in oil? No; they are tarred and left until a new coat is required.
47. Does the tar penetrate into the wood, or does it merely form a skin? It penetrates the wood, and I believe that sometimes, like paint, it is detrimental, because it confines the sap.
48. Supposing a bridge were put up at Gee's crossing, and a toll were charged, would anyone go across the bridge while there was a ford? The tolls on Gee's Bridge would not be worth collecting.
49. There is no possible revenue derivable from a bridge there? No.
50. If the bridge were paid for out of loan money, there would be no revenue from it to pay off the principal and interest? I do not think any revenue could be derived from the bridge.
51. *Mr. Trickett.*] What was the original estimate for this bridge—how did it come to be submitted to the Committee? That I cannot tell. I believe that at one time £6,000 was put down for the bridge. That would have been for the bridge alone, without counting the land or approaches, and would come near to the estimate that I myself since made.
52. Is Jerry's Plains a township? A small township with very few inhabitants.
53. You state that the full cost of the composite bridge would be only £17,000? I am given to understand so by Mr. M'Donald.
54. *Vice-Chairman.*] In reference to the matter of wooden bridges, to which the department seem to have given some consideration lately, you have had some experience of the very old bridges constructed in the early days of the colony? I have for thirty years.
55. Can you form any estimate as to how long those bridges have lasted—what is the longest period? I have known some of them which must have been twenty-five years old, and were still good. I know bridges that must be older than that.

56.

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Col. F. Wells. 20 Feb., 1890.

56. *Mr. Dowel.*] The bridge over the M'Donald River? That at Bendemeer is about thirty years old.
57. *Vice-Chairman.*] You have heard of ironbark lasting for fifty years? I have seen timber under the ground fifty years old, and still sound. I cannot say that the whole of the structure would last that time.
58. Is it possible to get as good ironbark now as was obtainable in those days? I think it is as good if it is treated with consideration—though it is not so plentiful now. First-class ironbark may still be obtained near Dubbo and at some places where the timber has not been so much out, though I do not think it can be got of the same size.
59. There is a considerable quantity of ironbark about the Hunter, and on the ranges between Molong and Parkes;—do you think that that ironbark is as lasting as that which used to be got from the ironstone country on the coast? No.
60. It is not so robust? No, nor are the trees so large. I have seen ironbark at Eugowra, near Forbes, not fit to put in any structure. I am not altogether an advocate of ironbark. In some places the ironbark is not so good as other timber growing near it.
61. Have you given attention to the merit of any specific for keeping away white ants? We have tried three or four remedies for it. I think the best is that with which your name is associated. We have also tried anti-ant.
62. That has been used throughout the Railway Department? We have used both in our department, but I know of nothing that has proved more effectual than arsenic and tallow.
63. *Mr. Lee.*] Could you enumerate the bridges upon which tolls are levied at the present time? I do not know one.
64. If a bridge were constructed at the site proposed, would it not be open to the public free of charge? Of course I cannot say; that would be a matter for the higher powers.
65. Can you tell me whether such tolls have been abolished by special Act of Parliament? I think it was done by a resolution of the House.
66. Applying to any individual bridge, or to the whole of the bridges? To all Government bridges, and I believe the Government purchased all private bridges—the last being, I think, either the Pyrmont bridge or the Wagga bridge.
67. At the present moment no tolls are levied on any bridges in the colony? I do not know of any.
68. If an estimate was submitted to this Committee showing the value of the traffic over a proposed bridge, it would be of no practical benefit? I really do not see how that affects the question.
69. If an estimate were given to the Committee showing the probable return from tolls from any proposed bridge, would that estimate be of any value? I do not think so.
70. For the reason that no tolls are collected? Yes.

WEDNESDAY, 12 *MARCH*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (CHAIRMAN).

The Hon. JOHN LACKEY.	JACOB GARRARD, Esq.
The Hon. ANDREW GARRAN.	HENRY COPELAND, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	JOHN HURLEY, Esq.

The Committee further considered the proposed Bridge over the Hunter River at Jerry's Plains.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, sworn, and further examined:—

R. Hickson, Esq. 12 Mar., 1890.

71. *Dr. Garran.*] In the design put before the Committee for the bridge at Gee's crossing what was the width of the roadway which was provided? 20 feet clear.
72. The evidence of all the practical drovers, given before the Sectional Committee, was to the effect that a roadway 15 feet in the clear would be ample for all their purposes; what would be the reduction in cost if the width were reduced to 15 feet? Very little, as there would be the same piers and the same girders. Only just the cost of the roadway and cross-girders.
73. Sufficient to be worth while making? I don't think it would.
74. Could you make a substantial bridge there which would be likely to be safe for the sum of £10,000? I don't think so. There are really two bridges in this place: a bridge over the main river and a bridge over the ana-branch which has to be crossed. The cheapest bridge we can put up there with our own timber would cost £12,000,
75. Is that exclusive of the cost of resuming the road to Gee's crossing? That is the mere cost of the two bridges, with the approach.
76. If you have to make a bridge over the ana-branch it is told to the Committee for the first time. The cost of a bridge over Gee's crossing would be greater than the cost of one over Bowman's crossing? No; there is a little ana-branch to be crossed there.
77. Was there a bridge over the ana-branch when the old bridge was in existence? I do not think so. I have not been there. I think they depended on crossing when the flood was not so high. It was not so deep as at Gee's crossing.
78. The local residents all admitted that they do not want an expensive structure, but they thought that the cheapest possible bridge would come within a price which the Government can easily afford? The cheapest possible bridge I could recommend would cost £15,000 and that does not provide any footway. With the footways it would cost £18,000.
79. *Mr. O'Sullivan.*] What breadth? 20 feet in the clear.
80. *Dr. Garran.*] What percentage off that if you reduce the width to 15 feet? I do not suppose it would make a difference of more than £1,000.
81. It would be only in the planking? Practically the girders would be slightly reduced, but not much.

82.

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R. Hickson, Esq.
12 Mar., 1890.

82. Is your plan for wooden piles throughout or for iron piles? For wooden piles, except in two instances.
83. No iron girders? No.
84. What is the largest span you propose? There are three of 160, and six of 35; and over the little ana-branch one of 90 and five of 35 feet.
85. Three of 160 would be sufficient to let all the drift go through? I think so.
86. We had it in evidence that the reason why the previous bridge washed away was because the piles had no bite in the ground? I could not say. I know nothing of the old bridge.
87. You are perfectly clear that you could not put anything over there that would be safe at a cost of £10,000? No. We could put a bridge over, but I do not think it would be advisable to put one across for less than £15,500 or £16,000.
88. *Mr. O'Sullivan.*] What led your department to believe that there was more stock driven across Bowman's Crossing? That is the evidence we got from the two officers who went up there to inquire.
89. Were they officers of the Stock Department or officers of your own department? Officers of our own department.
90. Are you aware whether the evidence points to the fact that 20,000 head of cattle cross Bowman's Crossing every year? I have seen by the newspapers that that is the case.
91. What is the width of Gee's crossing in flood time? If it is high flood it is about 1,000 feet.
92. Would that be above the highest flood level? That is the highest.
93. How much would the bridge be above that? 18 inches.
94. You think that a lower bridge would be unsafe in flood time? I do.
95. Of course you know that the bridge which was swept away was a low-level bridge? Yes.
96. Have you heard any reports about the scamping of work in connection with that bridge? No. It was made before I took charge of the department.
97. Who was the officer who supervised its erection? I do not know, but I can find out if the Committee wish it.
98. I suppose that a bridge across the ana-branch would be indispensable? Yes, it is quite as necessary as the other one.
99. How far is the ana-branch from the river? It depends on what state of the river you mean; if you mean at low water, I suppose it is about 500 feet from it. At high flood, it is practically a portion of the river.
100. You do not see your way to erect a substantial high-level bridge under a cost of £15,500? No.
101. *Mr. Hurley.*] The erection of a bridge there has been agitated for chiefly on account of travelling stock? Yes.
102. Since the completion of the railway from Newcastle to Sydney has not a very large number of stock travelled by train? There has been an enormous increase. I laid before the Committee the returns from the Muswellbrook station.
103. So, in a great measure, the stock trains have got over the difficulty and inconvenience caused by droving them by Bowman's Crossing to Sydney? I think so.
104. Have you considered the probability of the Railway Commissioners eventually giving facilities in the west, north, and south, for conveying dead meat to market in chilled vans? I have read in the newspapers that such a thing is contemplated; I have not given it any attention.
105. If that were carried out, especially at the various points along the northern line, would it not dispel in a great measure the necessity for a bridge over Bowman's Crossing or Gee's crossing? I presume there would be less cattle travelling along the roads if arrangements were made to carry dead meat by train.
106. By this means meat would be delivered to the consumer in a much better state than it is now, when cattle are driven along the roads? I believe so.
107. Or even when cattle are carried by train? I think so.
108. Do you know if the proposed bridge will tend to serve any large population other than drovers The reports I have had certainly go to show that it would not.
109. On the northern side of the river they could reach a station 9 miles distant? Yes, at Liddel.
110. Even when the river is high a large number from Jerry's Plains, in order to reach the market in Sydney, would have no need to use the river at all? From Jerry's Plains they have a high-level and a low-level road. They have a high-level road 22 miles long, clear of all floods, to Singleton; and they have also a low-level road, which is subject to floods, and which I think is 16 miles long.
111. As regards the people of Jerry's Plains proper there is actually no necessity to erect a bridge for their accommodation? All the evidence I have had goes to show that.
112. And, practically, this bridge would be constructed solely in the interests of pastoralists or drovers? I think almost entirely.
113. Which may be overcome by the facilities which the Commissioners will offer for conveying their cattle to market in another form? It may be.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

BRIDGE OVER THE HUNTER RIVER AT JERRY'S PLAINS.

REPORT.

THE Sectional Committee appointed to "inspect, take evidence, and report on the proposed bridge over the Hunter River, at Jerry's Plains," beg to report as follows:—

The Committee arrived at Singleton at 1·30 a.m. on Saturday, March 8th, and at 10 o'clock met in the Court-house to take evidence. Six witnesses were examined. In the afternoon the Committee visited the Singleton Bridge, and inspected the roadway, which is largely used for stock traffic as well as for general traffic, and the available breadth of which does not exceed 12 feet. On Monday morning, March 10th, at 7 o'clock, the Committee left Singleton for Muswellbrook, and took evidence in the Court-house from 11 until 1, resuming the sitting in the afternoon from 3 until 5. Eleven witnesses were examined. As regards the proposal originally submitted to the Standing Committee for a bridge to cost £20,000 or upwards, the evidence was almost unanimous that so expensive a structure is not required. But the testimony was equally in favour of a bridge with a roadway of about 15 feet, if a stable structure could be erected at a moderate sum. The local demand for a bridge is not very great, as both on the north and the south side access is obtainable even in flood times to a railway station. The district immediately north of the Hunter, in the neighbourhood of the proposed bridge, is principally devoted to fattening cattle, and it was admitted that though to those occupiers a bridge would be of very great convenience, it was not a matter of extreme urgency, because they seldom start their cattle for market unless they know that the river is passable. But the crossing at Bowman's is on the great highway from the north and the north-west to Richmond and Sydney, and even in competition with the facilities offered by the railway the number of cattle now crossing is estimated at not less than 20,000 a year. This is exclusive of sheep, which would be more sent by this route were it not for the difficulty of the crossing. There is also a moderate traffic in ordinary vehicles and by horsemen. For nine or ten months in the year it is admitted that, in ordinary seasons, the river is fordable with but little delay, but when the flood is up the delay and the inconvenience are greatly complained of. The stock is often sent back through Denman to Muswellbrook, and compelled to make the detour on the metalled road through Singleton to Warkworth. One drover testified that the crossing at Bowman's was the worst between Warrego and Sydney, and several drovers testified that it was the only serious difficulty on the road to Sydney.

Looking at the importance of the district, and the great convenience that a bridge would be, the Committee think that if a high level bridge, likely to be stable, with a 15 feet roadway, could be erected for £10,000, the expenditure would be justifiable.

The Committee made several inquiries as to the relative merits of Bowman's and Gee's crossings. They found the evidence to be in favour of the latter on engineering grounds, while for stock purposes both would serve equally well. But a bridge at Gee's would have the additional advantage of putting the people of Jerry's Plains within 11 miles of the Liddell platform; and that, according to the evidence of one fruit-grower, would facilitate the sending of orchard produce to northern markets.

The selection of Gee's crossing will necessitate some resumption of private land, but even including that the expense could probably be kept within £10,000.

Mr. Hurley disapproves of spending money on the bridge, considering it is not necessary.

ANDREW GARRAN,
Chairman.

Sydney, 11 March, 1890.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

BRIDGE OVER THE HUNTER RIVER AT JERRY'S PLAINS.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

SATURDAY, 8 *MARCH*, 1890.

[*The Sectional Committee met at the Court-house, Singleton*].

Present:—

The Honorable ANDREW GARRAN (Chairman).
The Hon. William Joseph Trickett. | Edward William O'Sullivan, Esq.
John Hurley, Esq.

The Sectional Committee proceeded to consider the proposed Bridge over the Hunter River, at Jerry's Plains.

John Brown, Esq., sworn, and examined:—

J. Brown, Esq.
8 Mar., 1890.

1. *Mr. Trickett.*] Where do you reside? At Jerry's Plains.
2. How long have you resided there? About thirty years, but I was in Singleton during five years during that time.
3. You represented the district of Patrick's Plains once in Parliament? Yes.
4. Do you know the site the Government has suggested for erecting a bridge over the river at Jerry's Plains? Three sites were surveyed, but I do not know the one which was suggested by the surveyors.
5. Do you know Gee's crossing? Yes.
6. Do you think that is a good position for a bridge? It would not be a bad position, but it would have to go through private property. On this side of the river you would have to go through a portion of Mr. Parnell's lands. You would have to go about 3 miles through Pearse's land, and about half a mile through Parnell's.
7. That would be 3½ miles which would have to be rented or purchased? Yes, before the top of Bowman's Hill is reached.
8. Would either of the other routes avoid the necessity of going through private property? Yes.
9. Which one? Bowman's crossing, on the main Northern road, passing through Jerry's Plains.
10. How far is that from Gee's crossing? Nearly 3 miles. There is another site at what they term "The Rocks."
11. How would that convenience the public generally? That would go over Government land mostly.
12. The crossing known as Bowman's is the one which could be used without any new roads being arranged for? Yes; we should not require any compensation for a new road there.
13. Is the road fenced? Yes, on both sides.
14. Would it be easier to erect a bridge at Bowman's crossing, or at Gee's crossing? I am not an engineer, but I do not think it would be so expensive to erect a bridge at Gee's crossing as it would at Bowman's crossing, but perhaps the difference would be made up in compensation which would have to be paid.
15. What is the width from bank to bank at Gee's crossing? About 70 yards.
16. How about Bowman's? It is not quite so wide there, but there is a gravel beach extending out from the river.
17. Upon which the foundation of the bridge could be erected? Of course, the foundation could be put in there.
18. You state that if a bridge is erected at Gee's crossing we should have to go through private property and compensation will have to be paid? Yes.
19. Do you think, taking all the circumstances into account, that the expense of erecting the two bridges would be about equal? Yes.
20. Would Bowman's crossing be as good a place as Gee's crossing? I think it would for travelling stock, but not for all purposes. The only advantage Gee's crossing would have would be that people would use it to go to Camberwell Railway station and Muswellbrook.
21. Are the people of Jerry's Plains unanimous as to where the bridge should be? They are all unanimous that a bridge should be erected. I do not think they care, so long as they get a bridge, whether it is at Gee's crossing at Bowman's, or at the Rocks. Perhaps the majority of people in the township might like it at Gee's crossing.
22. Do you know of any actual objections to the bridge being erected at Gee's crossing? I do not think anyone would object.

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J. Brown, Esq.
8 Mar., 1890.

23. Does not Mr. Pearse object? He might object, but I do not know. I know he would expect compensation, but what amount I cannot say.
24. Do you not know he objects, because it would have the effect of cutting off his property? Yes.
25. How are the people inconvenienced through the want of a bridge? Very badly. This is on the main cattle road, and people, for hundreds of miles out into Queensland, send their cattle down this road.
26. What course would the cattle which would use the bridge, if it were erected, take? Some come through Liverpool Plains, and others by different routes. There are three or four different routes.
27. *Chairman.*] Is it a stock route? Yes. The cattle can come down the main road to Muswellbrook, and they can go to Bowman's crossing and swim there.
28. *Mr. Trickett.*] I suppose a great quantity of stock for market concentrate at Bowman's Crossing? Since the river came up the horned cattle have averaged from 150 to 200 a mob. There have been two or three lots a week or more; sometimes four lots go past in a day.
29. And they all come to Bowman's crossing? Yes; for the purpose of getting to market. There is a boat there, but I am certain you would not attempt to go into it at the present time. It is dangerous. The cracks are stuffed up with bits of rag.
30. Do the cattle cross Jerry's Plains? Those coming from Denman do. To avoid Bowman's crossing others would have to go over the Goulburn, through Hungerford, and Mr. White's land, on sufferance.
31. How does the traffic in cattle and stock generally compare now with the traffic before the railway was opened? Last year there must have been an average of from 400 to 500 cattle a week passing.
32. Did many more than that pass before the railway was opened? There were more cattle in the northern district at that time.
33. Do I understand you to say that it is not the construction of the railway which has lessened the number of cattle travelling by road, but the falling off in the cattle themselves? Yes; but you must remember that when the river is fordable a large number of sheep cross, but it is impossible for them to do so now. The river has been up for six or seven months. Mr. Richards sends all his sheep by road if the weather will permit, because it is cheaper to do so, in the first instance, and in the second instance, the meat arrives at its destination in a far better condition than it would if sent by train. Butchers will give 5s. a head more for cattle sent by road as against cattle sent by train.
34. That is all very well in good seasons, when there is feed along the road;—what is done when there is no feed? When there is no feed they might make use of the railways if there was a rise in the market.
35. You are in the habit of observing the stock traffic along the road every day? Yes.
36. And have done for a number of years? Yes.
37. What do you think of an opinion of this kind. The question asked the witness examined was as follows:—"The demand now is for local traffic?" The answer was: "Yes, more than for stock. I judge by my local observations upon the tracks upon the old travelling stock route, which I have known for many years." What is your idea as to that opinion as to the traffic;—is it in accordance with your own observation? No, it is not. In the driest times stock has come by road.
38. And the route is constantly used? Yes. I do not believe there was a single week during the drought but what cattle and horses came by road.
39. Do you know the Bulga Road? Yes.
40. Does that converge into this crossing? Yes, that is the reason the cattle come that road. All the cattle going to Maitland come that road, too.
41. Do you think the traffic along that road for cattle and stock is as great as it used to be? Perhaps not, for there is not the same amount of cattle now, but it is always used.
42. Is there a bridge at Denman still? Yes.
43. Does not that bridge suit the Jerry's Plains people? No, only so far as the cattle coming to Bowman's crossing, and going no further.
44. What is the population of Jerry's Plains? It is a small township; I could not say what the population is, but within 5 miles round there will be about fifty houses, and I think the families will average from four to six.
45. Are there any selectors or small holders? Yes.
46. Is it not mostly held by people with large estates? No; there are a good many small holders.
47. Could you tell us the names of the holders of the large estates within that radius of 5 miles? I am nearly the largest landowner there. I have about 1,800 acres on this side of the river, and I think Bowman has about five sections.
48. These are the largest? Yes; the rest would not average much over 500 to 600 acres.
49. I suppose the real advantage of constructing this bridge would be to give an easier and a shorter approach to the railway line than at present exists? Yes; that would be the real advantage to the local people, but it would also be an advantage to stock-owners and graziers. Nearly every stock-owner in the northern district sends cattle, at times, by that road.
50. Have you known of any large number of cattle or stock being stuck up at the river? Yes; several have had to stop on the reserve for three or four days. The other day a man had to ask Mr. Miller to allow his cattle to stay in his paddock. In swimming them across next morning he lost one bullock.
51. Do you think stock-owners would pay a toll if a bridge were erected? I believe so; I would do so myself rather than swim them.
52. That means, I suppose, that they would only use the bridge when they could not use the river? If a bridge is built, people cannot evade toll. At Wiseman's Ferry you have to pay, even though you may have to swim your stock.
53. Looking at the matter in all its aspects, apart from the mere local aspect of the question, you think the bridge is an absolute necessity to enable you to get stock to market? Yes.
54. *Chairman.*] So far as cattle coming from the north are concerned, they can, if they like, make for Singleton or Denman? They make for Denman first, and then go through Jerry's Plains.
55. They cross the Goulburn River? No; 8 or 9 miles on the other side of Denman they turn off, and they have to go through Hungerford's land; there is not any road that way, only on sufferance.
56. If you were bringing a mob from Queensland and the river was up here, you could strike for Denman or Singleton? You would have to go over at Denman and then go to Singleton.
57. And from Singleton you can get to the Bulga Road? Yes.
58. So that the want of a bridge here does not prevent cattle from Queensland from crossing the river? No.

59.

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59. If you were coming down with cattle, at what point would you go off the road to strike Singleton, if you heard the river was up? I would be compelled to go to the bridge if I did not wish to swim them.
60. Where would you leave the main road? At Denman, and go back 14 miles to Muswellbrook.
61. But if you were coming from Queensland? The chief of the cattle go to Denman before going to Muswellbrook to be sold. If fat cattle are coming from Queensland they go to Denman and on to Jerry's Plains and swim. Otherwise they have to go 14 miles back to Muswellbrook; there are no reserves upon the Muswellbrook line for stock, until after they cross the river from Singleton.
62. Then the fat cattle route from the far north is through Denman? Yes, through Jerry's Plains also.
63. There is a bridge at Denman? Yes.
64. Then fat cattle have no inducement to come through Bowman's? Yes, they have. That is the shortest road. If they do not wish to swim the cattle they follow up the road to Muswellbrook; then they come back 14 miles. It is 14 miles from Denman to Jerry's Plains, and 14 to the Bulga.
65. But instead of aiming for Denman could not they make tracks to Singleton? Not without going back to Muswellbrook.
66. I mean when they are north of Muswellbrook altogether? There is a road called Sandy Creek which they can turn off upon. There is a road that way to Muswellbrook.
67. If you were bringing cattle down yourself to the Sydney market, and you heard the river was up, and you could not cross at Jerry's Plains or Bowman's crossing, which road would you take? I should prefer to wait on the reserves.
68. What kind of cattle cross here most, locally fattened or cattle from the north? Cattle from the north chiefly, but of course there is a great number of local cattle. All coming from the north prefer swimming to travelling on the metalled road down to Singleton.
69. And that is the reason they perfer Bowman's crossing? Yes.
70. But if that becomes an important road it is likely to be metalled, too? I don't know.
71. Is it because there is no bridge that the road is not metalled? I don't know.
72. If you get a bridge, it is very likely to become a good road? Well, we shall still have the reserves for our stock. We must have grass.
73. This line is a stock line for that reason? Yes, there are several reserves for stock.
74. The bridge is as much wanted for through stock as local stock? Yes, more so. The local people could keep their cattle back a day or two in the paddocks, but travelling stock can only stop a certain time on the reserves.
75. How long does it take for the river to go down? If it were up at the bank to-day, and were going down, you could swim the cattle to-morrow.
76. If there is no more rain now, the river will be crossed at the usual places in three days? Not without swimming at Jerry's Plains. It is over a week since the river was at its full height.
77. In a season like this, when the river is not fordable, would you get stuck up between here and the Bulga Road? No, there is a bridge at Warkworth, and another at Bulga.
78. This is the one difficulty, then? That is the only one.
79. Between the north and Sydney? Yes. If they think proper they can join the Wollombi, and cross at the ferry, where they can swim the cattle.
80. One bridge between Singleton and Denman would be sufficient for the whole of this district? Yes.
81. At any one point? Yes.
82. How many times within the last ten years, and for how many days a year, has this place been impassable? I could not say. We have had a good many dry seasons, but during the last six months I do not think it has been fordable for a man on horseback above a week or ten days at a time. A vehicle could not well cross it.
83. Do you think, if a bridge were made, it would take any quantity of stock from the railway traffic, and induce travelling by road? If a bridge were made, I believe the traffic, more especially for sheep, would return to the road.
84. And the building of a bridge would be rather against the interests of a railway? Yes; but you must consider the interests of the public. I know there would be a great number of sheep come along that road if the river were fordable, for this reason: A drover would drive 2,000 sheep from Breeza to Sydney for £50. From Jerry's Plains he would drive 2,000 sheep for £20. If you look at the railway charges you will find that after the drover is paid the owner would save about £75.
85. You are within easy reach of the railway, and would send by road? I have never yet sent a beast by rail.
86. The railway is only useful to you as a passenger and for goods? That is all.
87. During the last six months the river has been up a good deal? Yes, nearly every week.
88. And it has practically diverted all sheep traffic? Yes; only two lots have been able to go, and some of them were drowned in swimming.
89. The cattle business has been reduced about one half? I could not say, but there is not the same amount of cattle.
90. I mean of through cattle coming from the north? I do not think it has been reduced one half; but it has been reduced to some extent. On the average there would be 500 cattle a week travelling that road. If a bridge were up, I believe there would be something like 4,000 sheep. There is seldom less than 200 in a lot, and the average would be over two lots a week.
91. Do you think the convenience afforded would be such as to justify the expenditure upon this bridge? I think so.
92. Upon a high-level bridge? Yes. It will have to be substantial, and not liable to be swept away.
93. You think it would be a proper investment of public money to put £20,000 in an iron bridge? I believe so. There will be a greater demand for meat and other things every year as the population increases.
94. But the population of this district will not increase very much? I do not think it is decreasing. There is no doubt, if there was a bridge here, more people would settle down. I do not look on it as a local requirement, but as one for the whole of the people throughout the whole of the northern part of the colony.
95. You look at it as a high road? Yes.
96. *Mr. Hurley.*] You put this bridge down as a sort of squatters' bridge? I put it down as a bridge for the use of the public in general.

97.

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97. What class would benefit by the construction of a bridge at either of the three points named? The whole of the people travelling in the northern district.
98. Would any agricultural population benefit by it? I think so, in the course of time.
99. Would general merchandise be taken over? I think so. I think it would be used by the public in general.
100. You referred to the value of meat brought by road to market compared with the cattle that are trucked? Have you ever taken into consideration the probability of cattle being slaughtered inland and taken to market by refrigerating cars? There has been some talk about it, but I do not think it will ever pay.
101. Supposing facilities were given by the Railway Commissioners for taking meat to market in a chilled condition, would it not be more beneficial to the consumer and producer to send it by rail? I cannot say, for I do not know what they would charge per truck.
102. But I mean if the charges are favourable? In that case they might prefer to send by rail, but if they could get it cheaper by driving they would drive.
103. Would it not be better to the consumer that cattle should be killed inland and brought to market in the way suggested? It might, if the market could be regulated.
104. Are you aware they can take cattle and sheep from here to England with perfect safety and sell it? I think they take sheep, but not many cattle.
105. You admit it will be more advantageous to the consumer in the metropolitan market to have his meat conveyed to him through the chilled process, than by driving? I daresay it would.
106. Therefore, if refrigerating cars are used, there will be no great necessity for the construction of a bridge at either of the points named? I think there would. All the people in the locality would require the bridge.
107. What is the population of the district? There will be between 400 and 500 people.
108. The holdings are of a large character? No; they are small, with the exception of about four.
109. Is the land suited for anything else but pastoral purposes? You cannot have better agricultural land in the colony.
110. You only require population to make the place reproductive? That is all.
111. You said something about the bridge paying for itself, how do you make that out? I said the people would be satisfied to pay a toll. If the bridge were a wooden one, and did not cost much money, a toll might pay the interest on the cost of construction.
112. You are aware that the life of a wooden bridge would be only about twenty-five years, whilst an iron bridge would probably last four times that length of time? Yes.
113. You are aware that tolls, generally, are abolished, and that people have an aversion to paying them? Yes.
114. This bridge would only be used for travelling stock? Lots of people going up north travel on horseback. They do not all go by train. It is the high road to the north-west and the north. It is the travelling-stock road, and the road for everything else besides, right up to Cassillis and out north. At the present time there are no teams coming round Jerry's Plains for want of a bridge, but years ago I have seen twenty or thirty teams come round.
115. How many times was the river impassable last year? I could not rightly say. I suppose it must have been impassable three months out of the year for people not on horseback. People come over at the risk of their lives. If we had seasons in the future like that we had last year, there would only be three months in the year in which the river would be passable.
116. And you would only have the bridge used three months out of the twelve? It is a hard matter to get sheep to go through water; therefore sheep would always use the bridge at any time.
117. You have, in reality, not paid any attention to the question of cattle and sheep being brought to market in a chilled condition? I cannot say I have.
118. If that system were carried out and facilities for conveyance were given by the Railway Commissioners, the meat would be sent to market by rail? I expect so.
119. In the event of that system being carried out, a bridge would practically not be used by sheep? I do not expect the whole of the sheep in the northern district would be chilled. There would have to be more chilling places than one to do so.
120. Have the people of the northern district been looking for this bridge? When I was in the House. £10,000 was placed on the estimates for a bridge at Bowman's crossing, and one at Denman's. The Denman people got a bridge, and the Jerry's Plains people did not.
121. Do you not know that in those days members asked for most outrageous things on the slightest provocation? I do not think, during the time I was in the House, I asked for anything outrageous. I asked for what I considered was a public benefit.
122. And not to please your constituents? No.
123. *Mr. O'Sullivan.*] Do the people send a large number of cattle from this district down to Mr. Richards, at Riverstone? Yes.
124. I suppose he is likely to continue his works there? Yes.
125. And, probably, he will add the chilling process to his works? I cannot say.
126. Then the road is likely to be required to send cattle to Riverstone? I think so.
127. You seem to advocate the construction of a bridge at Bowman's crossing? I have no particular spot to advocate.
128. Are you aware that Bowman is opposed to this bridge being constructed there? No; I had no conversation about it. I do not think he is against the bridge at what is termed Bowman's crossing. Perhaps he is against the bridge at the Rocks, or at Gee's.
129. Why is Mr. Parnell opposed to the bridge at his crossing? I cannot tell you unless he considers the roads through his property would do an injury.
130. Do you think the people generally who use that road would prefer to have a bridge at Gee's crossing? No doubt the local people might.
131. The local people do not appear to be the most interested in this proposal? No. The public in general are in favour of a bridge being erected; but they do not care where, so long as they get one.
132. Can you state the number of cattle which went down the road last year? From 400 to 500 horned cattle a week, and a number of horses as well.

133.

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133. And all these crossed without a bridge? Yes, by swimming, and running the risk of being drowned.
134. Did they go down to Wiseman's Ferry? Yes; they take that road after leaving Jerry's Plains.
135. They would have to swim these, then? Yes; there is a punt there, but they prefer swimming. They have conveniences there; but here we have only a little boat, and the current is four times stronger here than there.
136. Do you think a good punt here might suit you? Yes; it might suit at Bowman's crossing for the sheep, if they are taken care of, and perhaps for the carts and people on horseback.
137. In view of this chilling process becoming general, and special cars being constructed, there is a prospect that these travelling routes will not be required, excepting at places like Mr. Richards', at Riverstone? I think the Government will do an injustice if they ever shut the reserves or roads up, for we do not know whether the experiment will pay or not.
138. If the chilling process is successful and the necessity of travelling stock to Sydney is dispensed with, the chief argument in favour of a bridge would be removed—In view of the chilling process being successful, would it not be better to have a good punt and boat at Bowman's crossing for the present? A bridge would be far better, but a punt might suit local requirements.
139. Is there sufficient justification, from the point of view of local requirement, for the construction of this bridge? I think there should be. There are bridges at other places which do not so much require them as this.
140. But this bridge is to cost over £20,000—Is there strong enough argument in favour of the construction of a bridge to cost as much as that, for local purposes, when possibly a punt or wooden bridge would be sufficient? We want some way of getting over the river in time of flood, either by punt, a good substantial bridge, or otherwise.
141. What do you think it would cost to construct a fairly good wooden bridge? I am no judge of these matters, but I think £6,000 or £7,000 ought to make one.
142. In view of the probability of the chief argument in favour of the construction of this bridge being removed in the course of a year or two, do you think a bridge costing £6,000 or £7,000 or a good punt would serve the requirements of the district? I daresay it would serve them, but not, perhaps, as well as a bridge.
143. Have you ever been to Wilcannia? No.
144. You know how sheep are crossed over some of those wide rivers out there? No.
145. You know there is a strong fall down the Darling River? There is more fall in the Hunter than any other river. If the river is more than half bank high here, you cannot take a punt across. You cannot take a punt across if the river is anything more than 8 feet high.
146. You know that enormous flocks of sheep and herds of cattle, 2,000 in number, cross at Wilcannia? Yes, but I do not think there is such a strong current there.
147. They cross the sheep there with a pontoon, with rails stretching across the river, and it seems to serve as well. You think the current of the Hunter would be too strong to allow of that being worked here? Yes.

Edward Parnell, Esq., sworn, and examined:—

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148. *Chairman.*] Are you a resident on the Hunter River? I was for a number of years, but I am living in Newcastle now.
149. But you retain your interest in property there? Yes.
150. You know the traffic of the locality well? I do.
151. During the time you were resident there, was there a bridge? Yes, for a short period.
152. Where? Bowman's crossing.
153. And that was swept away by flood? Yes.
154. Was that a low-level timber bridge? Yes.
155. What height above the bed of the river was it? I think about 10 or 12 feet.
156. It was available for all freshes which did not raise the water more than 12 feet? Yes.
157. But in heavier floods it was closed? Yes; the debris collected and lifted the bridge away
158. Would you again recommend the erection of a low-level bridge? No; it is a waste of money.
159. When that bridge was in existence was it a great convenience? Yes.
160. And has its absence been much felt? Yes.
161. What has been the effect of the destruction of the bridge on the cattle traffic? It has caused it to deviate.
162. Where to? To the railway.
163. You think it has thrown traffic on to the railway? Yes.
164. And the reconstruction of that bridge would take traffic a little [from the railway? It would. At the same time it would confer great public benefit.
165. Do you think one bridge between Singleton and Denman would be sufficient for the whole of the district? Yes, it would for cattle and sheep, but for people wanting to come to Singleton, a bridge is necessary at Wiseman's crossing-place, a place called Maison Dieu. Otherwise one bridge would be sufficient.
166. You think there should be a bridge at Maison Dieu, as well as at Jerry's Plains? Yes.
167. That is the shortest track to Singleton? Yes.
168. When the river is down they take the ford there? Yes.
169. It is only in flood-time they go round by water? Yes, it is 16 miles from the post office, Jerry's Plains to Singleton, and to go round in flood it is 25.
170. Has there been any attempt to have a punt on the Hunter River? Yes.
171. Where at? Bowman's crossing.
172. How did it work? Badly, and dangerously.
173. In what way? In the first place, the current was so strong I have seen drovers refuse to go over, although there was real necessity for so doing.
174. At what height of water? About the usual level.
175. When it is 10 feet high it begins to be useless for a punt? Yes, and it is useless when it is very low. When it is very high the stream is too strong for a punt to work, and when it is too low a punt will not move, and sheep are very difficult to get over in winter time. I have been stopped when it has been only a foot deep.

176.

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176. If the crossing were near Gee's crossing, it would enable people south of the Hunter to get at one of the railway stations? Yes.
177. Which would they go for? Liddell or Camberwell.
178. Is there a good cross-road? No; one would have to be made.
179. And the idea of making a bridge for that purpose would necessitate a new road from Jerry's Plains to the railway? Yes.
180. Is such a road wanted for the traffic of the district? Individually, I do not want the road, but I think the people at Jerry's Plains would benefit by it.
181. It would have to go through your property? Yes.
182. And you would rather not have it there? Yes.
183. Would you prefer the bridge to be at Bowman's? Yes, I wish it to be understood I was opposed to the erection of a bridge at Gee's crossing-place, believing Bowman's was the best, but when I understood that the site at Bowman's was objectionable I withdrew my opposition, and I say now that if a bridge at Gee's is beneficial to the public, I do not think I have a right to stand in the way. It would do me a considerable amount of harm, because it would go through my cultivated property, and it would also do Mr. Pearse harm.
184. But still you admit the banks are better at Gee's crossing? I am not an engineer.
185. And it would also be a short cut for the Jerry's Plains people to the railway? It would.
186. Do you think the traffic crossing here is important enough to justify this large expenditure? I am inclined to think so. I think the traffic would grow.
187. During nine months of the year you can get stock across without trouble? No, not sheep.
188. Are there many sheep come down this way? I have been at Newcastle a good deal this last three years, but I go up country occasionally, and I think there would have been more come down if they could have crossed.
189. Do you think sheep suffer as much from being carried by rail as cattle? I do not think they do. I think the wool prevents them from being bruised.
190. Sheep do not travel so much on foot to Sydney now, since the railways were opened? I think that if the railway only took 100 there would be 100 less travelling by road. I do not think it has made any perceptible diminution in the number going to Sydney.
191. Do you think this bridge is mostly wanted for the locally fattened stock, or for stock coming from the north? For stock coming from the north.
192. You advocate the construction of the bridge more as a national than a local work. Yes.
193. And you think it is really wanted? Yes.
194. And although it would be a decided advantage to the local people, it would be a greater advantage to the through stock people? Yes, it would be scarcely any advantage to myself.
195. That is because your land would be cut up? Yes.
196. But to you, as a person sending stock to market, it would be a convenience? Yes.
197. It will lead to a great deal more communication between the north and south bank? Yes.
198. In wet weather like this people do not travel stock unless obliged? If there is a good market they will travel at any time.
199. What I want to know is whether the stoppage of traffic for three or four days materially affects business? I think so, because there is no place to feed sheep upon, unless they trespass.
200. There are reserves? Yes, a little distance back.
201. In wet weather like this the reserves have plenty of grass upon them? Yes.
202. So that when it is too wet to cross the river, there is always food to be had? Yes.
203. If you are stuck up you have something to eat? Yes, unless the river comes down suddenly, which is unusual.
204. For how many days at a time have you known the river to be impassable? Two or three days for cattle, and at least a week for sheep.
205. *Mr. Trickett.*] If a bridge is built at Bowman's crossing will it be absolutely necessary to erect another at Maison Dieu? Not absolutely necessary, because a bridge at Maison Dieu would only be for the benefit of the people at Jerry's Plains.
206. If a bridge were erected at Gee's crossing, would it be absolutely necessary to have one at Maison Dieu? No, because I think the people would then go up to Liddell railway station, if a road were made, or to Camberwell.
207. Do you think that if a wooden bridge could be built for £6,000 or £7,000 it would be a desirable work to carry out? No, because I have heard it said that an iron bridge would last four times as long as a wooden one.
208. Have you known of frequent stoppages of traffic up the river? Yes. I know of one person who suffered whilst endeavouring to cross. He suffered from hernia, which became strangulated, and he died in consequence of an operation. I know of one person who, six or seven years ago, was killed or drowned there, and it would not have happened if there had been a bridge. The other day, at Jerry's Plains, a man told me he had been nearly washed off his horse in endeavouring to cross.
209. Where do the people of Jerry's Plains make for,—Singleton or Muswellbrook? Singleton as a rule, but occasionally they go to Muswellbrook. If they go to buy cattle at the sale yards they go to Muswellbrook, and then the bridge will be a great convenience.
210. Do you regard the district as one for settlers? I do not know a better district in the colony for settlers, if produce was selling at a paying price.
211. Is there a large area of land open for settlement? No; it is an old settlement.
212. Since the old bridge was washed away, there has been serious inconvenience? Yes; I have experienced inconvenience myself.
213. Do you know Krust's lane? Yes.
214. Did you ever hear of Mr. Lawrence recommending the construction of a high-level bridge at that place? Yes.
215. Would that meet a public convenience? It would.
216. If a bridge were constructed there would the people use Liddell station? Yes.
217. Can you give us an idea of the distance from there to Liddell? About 9 miles as the crow flies. It would pass through a large quantity of cultivated land, even by that road.

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218. You know the bridge at Denman? Yes; it was at Denman that the unfortunate case of the man suffering from hernia arose.
219. You do not think that that district is likely to give occupation to an agricultural class, unless they have more easy access to market for produce? Yes; until we have a railway, which was promised by the Government. I believe the last Government promised a survey. A deputation, of which I was a member, was promised by Mr. Sutherland that there should be a survey, and we have heard nothing about it.
220. Promises of surveys for railways were made in a very indiscriminate fashion some years ago? I did not value it much.
221. There is not a sufficient population to justify an expenditure of that kind? It would be a great feeder for the Singleton line.
222. From what you say there seems to be no probability in the immediate future of an increase in the agricultural population of the district? I do not think so.
223. So that, practically, this bridge you are asking for will be for the benefit of the pastoral class? Yes; but if the bridge were erected at Gee's I have no doubt that produce would go to Liddell, and it would grow in consequence.
224. *Mr. O'Sullivan.*] Are most of the lands about here private holdings? Yes.
225. You are in the Eastern Division, are you not? I think so.
226. Are there any leasehold areas to be thrown open? None, that I am aware of.
227. Do none of the pastoralists about here own leasehold areas? I think none. It was all taken up at once.
228. Then there does not seem to be much scope for an agricultural population? No; unless the present proprietors chose to let their land.
229. What is the land in this district most suited for? At Jerry's Plains' the other day, I saw the finest corn and onions and other products I have ever seen. It is not only good for agriculture, but for fattening. Three years ago I had some heifers taken to Maitland sale-yard, and Mr. Brunker, a good authority, said they would have done as exhibits in England. I had as many as 40 bushels to the acre of wheat. The wheat was exhibited in Collins-street, Melbourne, but it does not pay to cultivate it. I think it costs 6d. a bushel to bring it to the Singleton market alone. Nature intended this district, I believe, for an agricultural and grazing one.
230. You think, then, there is scope in this district for agriculturists? If they could get a better price for their grain. People will not grow grain at 3s. per bushel when they can get £5 and £6 for bullocks.
231. *Mr. Hurley.*] You have heard the examination of previous witnesses in regard to the probability of chilled meat being conveyed to the markets? Yes.
232. You recognise the fact that beef or mutton taken to market in this state is more acceptable to the consumer than if driven or conveyed by train? Yes.
233. If the system were carried out successfully, could you not reach market at the same cost? Yes.
234. Would not the necessity for this bridge be then done away with in a great measure? If all the sheep and cattle were killed and frozen up country and sent to market, it would do away with the necessity of it a great deal. But I agree with Mr. Brown when he says he does not think the experiment will pay. I am told, what with the room which will be occupied by ice, &c., the sheep will take up more room than they do at present. Consequently, the railway would have to charge more.
235. It is all a matter of cost? Yes.
236. The difficulty of reaching market and the high rate of charges by railway—Are these the reasons why there is not an agricultural population on the soil? Yes. If they opened the road to Liddell the difficulty would not be so great—25 miles to bring a bushel of wheat from Jerry's Plains, and 17 miles when the river is low.
237. The construction of a first-class road to Liddell would probably lead to a larger population? Yes.
238. And it would be remunerative to the Department? Yes. I may mention that there are a number of young men who supplement what they get from small farming by droving, and I think if the bridge were not erected, these persons would lose their occupation. The result would be that they would become discontented and would probably join the ranks of the unemployed in Sydney.
239. What will become of your cattle if, because the bridge is not constructed, these men leave the district? The people will have to look after them themselves.
240. You will be forced into the position of sending them by rail? Yes. Of course, the railroad is a most important interest, but I do not think it should be carried on at the expense of all other interests.

Mr. Benjamin Harley, storekeeper, sworn, and examined:—

Mr. B. Harley. 8 Mar., 1890.

241. *Mr. Hurley.*] What are you? A storekeeper.
242. Where do you reside? At Jerry's Plains.
243. Have you lived there long? Close on twenty-five years.
244. You know the district well? Yes.
245. You know the subject-matter before the Committee? Yes.
246. You have heard of this crossing? Yes.
247. Which do you think would be most favourable for the construction of a bridge? Gee's.
248. Why? Because it is nearer to Liddell and nearer to Muswellbrook, and travelling stock could come that way, by a road being made through Mr. Pearse's.
249. Do you look on the construction of the bridge as being chiefly in the interests of the pastoral class? No; it would be for the benefit of the public at Jerry's Plains.
250. Would not general merchandise be taken along the road? Probably grain and corn would.
251. How do you get your other goods? I have to go round to Singleton, whereas I could go to Liddell if the bridge were constructed.
252. Are there any other storekeepers in the district save yourself? Only one at present.
253. What population do you generally serve? Almost all who are in Jerry's Plains. They number something like 400 or 500.
254. What do you pay for the freight of your store goods? £1 per ton.
255. And if you could reach Liddell it would be 50 per cent. less? Yes.
256. Is there any probability of a settled agricultural population raising itself there? Yes; there is a lot of Crown land, called the temporary common, available. 257.

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Mr. B. Harley. 8 Mar., 1890.

257. Are there any reserves? Yes, at this end of the town.
258. A large area? Yes.
259. Suitable for agriculture? Not the reserves, but the temporary common is suitable.
260. Do the people of the district follow any other vocation than that of droving? Yes; there are a few farmers, and at Doyle's Creek there is a lot of them.
261. Where do they send their produce? To Singleton.
262. Is it of a productive character to them? Yes, they make a living by it. I was farming there myself for seventeen years.
263. What is the produce? Principally wheat.
264. Looking beyond the fact that the bridge is asked for chiefly on behalf of the pastoralists, you believe it would be of great advantage to the general public otherwise? Yes.
265. Which crossing do you think is the best? Gee's. It has the best banks, and is the best site I know of.
266. Have you noticed how many times the river was impassable last year? Of late it has been impassable a good deal. Within the last year I have come three times to Singleton across Maison Dieu, and I have had to travel 26 miles additional by Warkworth.
267. You think the bridge is absolutely necessary in the interests of the general public? Yes.
268. Is the road good or bad? Very bad in places.
269. Are the roads generally ill-attended to? Very badly, especially from Bulga to Jerry's Plains.
270. *Mr. O'Sullivan.*] If a bridge were constructed at Gee's crossing, and a road were made to Liddell, the railway traffic between Singleton and Liddell would develop? Yes, there is no doubt about that.
271. Would it be better for the people of Jerry's Plains to be served that way or by way of Maison Dieu? Better by Liddell, I think.
272. Is that a reason why you advocate a crossing at Gee's? Yes, and it would convenience the public travelling up country.
273. If the river is up you have to go away from Singleton 26 miles to go up country. How many people would be served locally by the construction of the bridge at Gee's crossing? The whole of the public, I think.
274. What about their number? Somewhere about 500.
275. A bridge constructed at Bowman's crossing, then, would serve you as well for the purpose of reaching the railway as one across Gee's? No; in fact there is no site at all at Bowman's for a bridge.
276. But a bridge at Bowman's would better serve the travelling stock? Perhaps it would.
277. Is Bowman's crossing on the through stock route? Yes.
278. You mention that there would be some Crown land—partly of the temporary common—open for selection. Where is that? Close on Jerry's Plains, in the Muswellbrook district.
279. How many acres do you think are available for settlement on the temporary common? About 4,000 acres.
280. Is not this temporary common required by the public? No.
281. You think they have commonage enough in the permanent one? Yes; we had a meeting the other night, and decided to try and get it thrown open.
282. Who uses the temporary common at present? The inhabitants of Jerry's Plains.
283. Is it not leased to one man? No.
284. You spoke of some reserves; are they not required for public purposes? Some of them.
285. What are they? Travelling stock and timber reserves, and church and school reserves.
286. Have these timber reserves any timber upon them? Yes, some of them.
287. Are they leased for any particular purpose? I could not say.
288. Do you think these timber and water reserves are useful for travelling stock? Not all of them.
289. You think some might be thrown open for selection? Yes.
290. If a bridge were constructed it might induce persons to take up land around Jerry's Plains, and become permanent settlers? Yes.

Mr. Henry Parker, grazier, sworn, and examined:—

Mr. H. Parker. 8 Mar., 1890.

291. *Chairman.*] Where do you reside? At Jerry's Plains.
292. What business are you engaged in? I am a publican and grazier.
293. Do you rent Crown lands? No.
294. Do you occupy your own land? Yes.
295. How long have you resided there? Seven years.
296. During the time you have been there, there has been no bridge? No.
297. Is it your opinion that the want of a bridge has been much felt? Yes.
298. By what class of society? Mostly by the graziers.
299. Graziers on the north or south side? On the north.
300. Wanting to get south with their fat stock? Yes.
301. Is the district north of the Hunter, between that point and Muswellbrook, given up to fattening stock? Yes.
302. And when it is fattened it has to be brought to Sydney? Yes.
303–4. Does it generally prefer to go by road? Yes.
305. It does not go by railway? Sometimes it does.
306. And the bridge is needed as the shortest cut to Sydney? Yes.
307. During the time you have been here, how often has that river been unfordable for stock? In the whole time it has been unfordable for seven or eight months altogether.
308. And this year it has been more unfordable than ever it was before? Yes.
309. And has the inconvenience been very great this year? Yes.
310. Are there many agricultural producers north of the river? Not many.
311. The land is principally in fairly sized estates? Yes.
312. It is nearly all given up to grazing? The greatest portion is.
313. And mostly for cattle purposes? Yes.
314. Very little sheep? Yes.
315. Have you the opportunity of seeing the travelling stock come down from the north? They come past my door.

316.

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316. Which is the greatest—the travelling stock or the local stock? As a rule it is mostly northern stock.
317. It is principally as a high road that this road is used? Yes; it is the high road from the northern district to Sydney.
318. And it is to improve it that you want the bridge? Yes.
319. When you want to get to Sydney which way do you go? I should go to Singleton.
320. You do not go to Liddell? No.
321. It is a shorter journey to Liddell? It is, but it is a rough road.
322. Then even if a bridge were made, you would not care if the road were no better to go to Liddell to get to Sydney? No.
323. Then the bridge would not throw much passenger traffic on the railway—It would all go to Singleton—The chief value of this bridge, at present, would be that it would be a stock bridge? Yes; at present.
324. Where would the market for wheat be? It would come to Singleton to go to Sydney.
325. Would Sydney be the best market? Yes.
326. It is no good sending it north? No.
327. It is better wheat land up there than here? I do not think so.
328. How about Glen Innes? That is right enough.
329. You have wheat-growing land in the north as good as here? Yes.
330. Do you think it would pay to grow wheat here and send it to Sydney? Not with the present state of the haulage.
331. You would want cheaper railway freights? Yes.
332. If the Government spent money to make this bridge, they would have to reduce railway freights to enable farmers to live? Yes.
333. Are there many farmers at work? Yes.
334. And they make a living? Yes.
335. Could not a still larger number make a living? It it is only a hand-to-mouth living that they make.
336. Would Maitland or Singleton be the market? Yes.
337. How much would you have to pay for that distance? I do not know.
338. Do you get goods by rail to Singleton? Yes.
339. How much a ton do you pay for them from Sydney to Singleton? I could not tell you.
340. How much from Singleton here? £1 a ton from here to Jerry's Plains.
341. Is that nearly one-half of what you pay for all the rest of the way to Sydney? No.
342. And the 26 miles costs you as much as all the rest of the way from Singleton to Sydney? No. We mostly get our goods from Maitland.
343. You do not deal with Sydney? Not of late.
344. *Mr. Trickett.*] Which do you think the best site for a bridge? I should be in favour of the old site. I consider the old site suits all the north-western requirements.
345. That is Bowman's crossing? Yes; it is the main stock route from the north to Sydney. To give you an idea of the number of sheep crossing, I may mention that 45,000 left one station alone in 1888, and they all went over Bowman's crossing. If they cannot get over they come by Singleton, which is a great deal further round.
346. Has the stock traffic fallen off much during the last few years? Not a great deal. Last year it fell off on account of the dryness of the season.
347. And on account of the diminution of stock generally? Yes.
348. Has it fallen off much by reason of railway competition? I do not think so; not a great deal.
349. Do stock-owners prefer the road to the railway? As a rule.
350. That is in favourable seasons? Yes.
351. Why is that? Because they seem to think that the cattle go to market better and they are not knocked about and bruised. I know that butchers would rather give from 4s. to 5s. a head more for road-driven cattle than for trucked cattle. There is a great deal of loss in cattle going by trucks.
352. How do you view the idea of sending the carcases of cattle down under the freezing process? I fancy myself that that would be in favour of stock. I think it would suit better than taking them by road.
353. Will this bridge be of any local advantage? Yes.
354. In what way? For people in the neighbourhood of Jerry's Plains. A number of people who live just over the north of Bowman's crossing would come this way if there were a bridge.
355. They would come to Singleton? Yes.
356. Do you think stock-owners would pay a toll on a bridge? I should think they would be willing to do so. I think it would be a fair thing to charge a toll.
357. Supposing the Government decided to erect a bridge at Gee's crossing, do you think that the stock-owners would always go by Bowman's crossing if they could get over for nothing? I do not know. I expect they would if the river was down; but I do not think it would be right to allow them to come so close.
358. That could be dealt with by regulation? Yes. I know that we had to pay to go over the Richmond bridge. Some people went a mile to avoid it, and were charged all the same.
359. A bridge over Gee's crossing would necessarily interfere with Pearse's property? Yes.
360. Would it injure it much? I think it would cut a great deal of his frontage off.
361. Have you ever heard him say what he would want for compensation? No.
362. Could you give us any idea what the compensation would be? I could not.
363. Is there anyone who could give us information of that kind? Mr. Cousins might.
364. Is Mr. Cousins a landowner? Yes.
365. *Mr. O'Sullivan.*] If a bridge were constructed at Bowman's crossing it would have a tendency to take the local traffic to Muswellbrook, instead of Singleton? I do not think so.
366. Would it not bring the local people nearer to Muswellbrook than Singleton? Not the Jerry's Plains people.
367. If they had to cross at Bowman's they would be nearer then to Muswellbrook than Singleton? No, nearer to Singleton. It is 25 miles round by Bowman's crossing to Muswellbrook, and only 17 to Singleton—that is by way of Maison Dieu.

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Mr. H. Parker. 8 Mar., 1890.

368. Do you think the wants of the district and of the travelling stock proprietors would be better met by having one large high-level bridge, or a fair sized bridge at Bowman's crossing, and a fair sized bridge at Maison Dieu? I think the public would gain an advantage by having the two, because it would give them the privilege of coming straight on, whereas they have now to come round.
369. One bridge might cost £25,000;—if a good bridge were constructed at Bowman's for £8,000 or £10,000, and another at Maison Dieu for £7,000—£17,000 in all—the latter work would be cheaper to the State, and give more accommodation to the residents generally? By far.

Mr. Walter Young Cousins, grazier, sworn, and examined:—

Mr. W. Y. Cousins. 8 Mar., 1890.

370. *Chairman.*] Where do you reside? Singleton.
371. What is your occupation? I am a grazier in the Upper Hunter, and a wine-grower in the Lower Hunter.
372. Where is your land on the Upper Hunter? Four miles distant from Denman.
373. Is the bridge at Denman much used by travelling stock? Yes, while the river is impassable.
374. Where does that stock come from? Mostly from the interior—from the north-west. It crosses the river at Denman.
375. What route does it take, then, to get to Sydney? *Via* Jerry's Plains.
376. Does it cross the Hunter again? Yes.
377. Then it crosses the Upper Hunter once at Denman and the Lower Hunter at Bowman's? Yes.
378. There is a bridge at Denman? Yes.
379. Is it a high-level bridge? Yes.
380. A good bridge? Yes.
381. Do you know what it cost? No.
382. Is it wood or iron? Wood.
383. Would a bridge of that quality be sufficient at Jerry's Plains? I think so. If the people get a bridge of this description at Jerry's Plains they ought to, and will, probably, be satisfied.
384. Do you think the cheapest description of high-level bridge which the engineers could put up would satisfy the people of Jerry's Plains? I would not say that. I do not know sufficient about bridge-making to form an idea.
385. All you want is the narrowest bridge which will take a vehicle across? Yes. We do not want it too narrow, because travelling stock require room; they do not require to be hemmed in.
386. What is the narrowest bridge which will suit travelling stock? About 15 feet or 16 feet.
387. They go through less than that to get into the yards? Yes; but stock, as a rule, when they get on a bridge, commence to rush, and if they have not room they might be injured.
388. But still you think a 15-foot bridge above flood would meet the requirements? I do.
389. Do you think a bridge of that kind at Jerry's Plains and another another at Maison Dieu would be preferable to one expensive bridge? I think it would suit the public better.
390. When you are coming from Denman to Singleton, do you pass through Jerry's Plains? Yes.
391. And in dry weather you go by Maison Dieu? Yes.
392. Looking at the question of convenience to Singleton, and the people of the north-west, two small bridges would be better than one big one? Yes.
393. If you live at Denman you know more of the traffic from the north-west than of that which comes from the north? Yes.
394. Have you heard people from the north complain of the crossing? I have heard complaints, and I have seen people who have had occasion to complain.
395. Do you really think there is any serious obstruction to the traffic to Sydney? I really do.
396. We are told that the cattle are seldom detained more than three days;—is that a serious matter on a long stock journey? Yes.
397. Would it not give the cattle a little spell? Yes.
398. It is no great harm to wait three days? But they are often inconvenienced by not being able to get on to a reserve. They may have to go back 10 miles or 12 miles to the nearest reserve.
399. But if a reserve is handy a delay does not hurt them? Yes, it does. The travelling backwards and forwards would do them harm.
400. That is if they had to go back? Yes.
401. If they are near a reserve three days' rest would not hurt them? I think not; but the owner might be affected by not being able to get to market.
402. The want of a bridge is more inconvenience to a man travelling sheep than cattle? Yes.
403. And as a rule the sheep take the railway more than cattle? Yes; but I do not think they would if they were not obstructed by the river. I do not think anyone would travel sheep by train in preference to the road.
404. You have not had much experience in travelling stock yourself? I have,—both cattle and sheep.
405. By this route? Yes.
406. Have you ever been stuck up at any time? Never. I never started if I thought there was a chance of being stuck up.
407. But the people coming long distances have to take their chance? Yes.
408. And if they know that the river is up cannot they stay at the nearest reserve? They can.
409. And they always do know in these telegraphic days? They certainly would know at Denman.
410. A man knowing that the river was impassable at Bowman's, would not start from Denman? I think not. Under the Reserve Act they are only allowed to remain a certain time on the reserve.
411. But if a man stays two or three days with cattle that is enough? I think twenty-four hours is the limit.
412. Still, even on the main roads, there is a good deal of grass? I do not think you will find much on a travelling stock road.
413. Not even in a season like this? I daresay you could find it now, simply because there is no traffic on the road on account of the river.
414. When you have once got across the Hunter, there is nothing to stop you between that point and Sydney? Nothing that I know of.
415. Do you think the traffic in this district is such as to justify an expenditure of £20,000 on a bridge or two bridges? I think so.

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Mr. W. Y. Cousins. 8 Mar., 1890.

416. Do you prefer two bridges at £10,000 each, or one at £20,000? Considering that there was one bridge washed away at Bowman's crossing, I do not know how to reply to you.
417. *Mr. Trickett.*] Do you think the stock traffic has diminished during the last few years? I believe it has during the last twelve months.
418. For what reason? Owing to the impassable state of the roads and river.
419. Not by reason of the road being a bad one? I do not think so.
420. Do you know whether much stock is sent by train now? I believe there is not.
421. Sheep or cattle? Principally sheep.
422. It was given in evidence in Sydney that there was hardly a hoof mark to be seen on Sir Thomas Mitchell's line, and that on the other road, *via* Jerry's Plains, there was no evidence at all of stock traffic. What do you say to that? A statement of that kind would not be correct. I think Mr. Brown and Mr. Parnell know different.
423. Are you of the same opinion? Yes.
424. Any person who has been in the habit of going there frequently would not hazard such a statement? No.
425. You know Mr. Pearse's property? Yes.
426. And a bridge at Gee's crossing would necessarily involve the taking of some of his land? I believe it would.
427. It would be an advantage to us to know what the cost to the country would be. Could you give us any idea? I could not.
428. About 3 miles of road I believe would go through his place, and he would be deprived of some water frontage? He would.
429. Could not you give us an idea of the amount of compensation which would be required? Not the slightest.
430. Is Mr. Pearse in town? I really could not say.

Edward Alford, Esq., Inspector of Stock, sworn, and examined:—

E. Alford, Esq. 8 Mar., 1890.

431. *Chairman.*] What position do you hold in the Public Service? Inspector of Stock for this district.
432. How far does it run? From Hall's Creek to Branxton.
433. And this is about the centre of your district? Yes.
434. Are you stationed here? No, at Warkworth.
435. You know the proposed sites for a bridge? Yes, I have heard of them.
436. Have you crossed Gee's crossing and Bowman's? Yes, hundreds of times.
437. Which do you think is the best for a bridge? I should think Bowman's. It has a good road to it, and is good on each side.
438. You do not profess to speak from an engineering point of view? No.
439. For stock purposes either would do equally well? Bowman's would be the best.
440. So far as the Jerry's Plains people require quick access to the nearest railway station, would not Gee's crossing suit better? Yes.
441. There is some advantage on that account? A little.
442. If the engineers said they could put up a cheap bridge better at Gee's than at Bowman's, you would accept that as a sufficient reason why their opinion should be carried out? I suppose it would have to be accepted, but I do not think it would be as good for stock traffic.
443. You know the stock passing down? Yes, when I am on the roads.
444. Is it mostly local stock, or stock from the north? It is decidedly not local, but from the north.
445. Then the bridge is not so much wanted for local purposes as for the stock road? No, it is wanted for general purposes for the northern district.
446. Has the stock traffic this season been much injured by the rise of the river? Yes, they had to come round by Singleton.
447. They can get round? Yes; by going to Muswellbrook round by Singleton, and then back again almost to Warkworth, which is a distance of 60 miles extra journey to Sydney.
448. Has much stock had to go that distance this year? Yes.
449. If a high-level bridge, 15 feet wide, were made, would it not be enough for all purposes? Yes.
450. For one buggy to drive over? Yes.
451. You do not want a magnificent bridge? No.
452. Simply a way across the river when the floods are up? Yes; and one which will not wash away.
453. The needs of the district do not require anything more than that? I do not think so.
454. Does much timber come down the river? Yes.
455. The span must be wide enough to let it through? Yes, or it will wash the bridge away.
456. What do you think "wide enough" means? I could scarcely tell you; but it would have to be some considerable width. Sometimes huge trees, 60 or 70 feet long, come down.
457. They go end on sometimes? Sometimes they go straight.
458. For purely local purposes would this bridge be any considerable convenience? It would indeed. There is a great lot of stock from Muswellbrook, Denman, and other places, which has to go all the way by Singleton and down this metal road, and it plays the mischief with them.
459. But the bridge is not so much required for the mere local traffic? It is not so much required as for other purposes, because they can get over by boat.
460. When you say that these people have to go round 60 miles, you do not mean that they have to go all the way to Bowman's crossing to find the river unfordable? They may. It rises very suddenly sometimes. I have known stock come there and then go back to Muswellbrook.
461. Do not you think the Muswellbrook people know, in these telegraphic days, whether it is passable? They do not come by Muswellbrook, but by Denman.
462. Would not they know it at Denman? I have been caught myself at Denman. The Goulburn has risen so rapidly that I have had to turn back and go to Muswellbrook.
463. You know as a fact that this season's stock has been turned back from Bowman's crossing to Muswellbrook? Yes.
464. Are they obliged to go all the way back to Muswellbrook? They cannot go any other way.
465. Why cannot they go across country? Because they have no road. It is all private property—Bowman's, Pearse's, and Parnell's property.

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E. Alford, Esq. 8 Mar., 1890.

466. They are obliged to stick to the stock roads? Yes.
467. Do you think the traffic is sufficiently important to justify the building of a bridge? From my experience, as a public officer, I think a bridge is really required.
468. Do you know the crossing at Maison Dieu? Yes.
469. Do you think a cheap bridge is required there? Yes; they cannot go over there with anything like a load on.
470. It is good enough for stock and buggies? Yes, when the river is down.
471. Buggies can get across? Yes.
472. But not teams? No, not if they are heavily laden.
473. You think, then, for the accommodation of the district, two bridges are wanted? Yes.
474-5. *Mr. Trickett.*] Have you any records of the stock which cross the river? Not here.
476-7. Where is your office? Twelve miles from here, at Warkworth.
478. You supplied some figures for Mr. Bruce? Yes.
479. Are they correct? They are. In fact they are under the estimate, if anything.
480. You stated in your telegram it was an estimate. Is there any check kept on stock? Yes; I know of lots of stock which I never see at all.
481. You gave the returns for 1888-9. Were the numbers for the preceding year more or less? That all depends on the season. In the bad seasons the stock traffic was very small indeed, but of course during these last two or three years it has increased wonderfully. But in the bad seasons there was nothing left up country to come down.
482. Do you see any indication of this being abandoned as a stock route? I cannot see it at all.
483. You say that it is still required and used? Yes, and will be used.
484. Do you see much diminution in the stock traffic since the railway was built? This last year it has not been so great, but of course the seasons are not so good up country.
485. You think that is the chief diminution? Yes.
486. Do stock-owners prefer the road or the railway for sending their stock? I think the road, because it is too expensive the other way. Of course, small stock-owners have to send by rail, because it will not pay them to send by road. Where they have considerable quantities they prefer the road, as being cheaper.
487. Any other reason? The butchers seem to like the road stock the best. It does not get so bruised and knocked about as stock carried by rail.
488. Do you think the stock-owners would pay a toll on the bridge if it were erected? I do not think they would have any objection, because there are reserves on both sides.
489. I suppose sheep are not so much sent this way, on account of having to cross the river? They must come round this way.
490. But even if the river has only 12 or 18 inches of water in it, it is difficult to get sheep across? It is.
491. Do you think more sheep would travel by this road if the river were bridged? Yes.
492. As a person having special knowledge of these matters, do you think the bridge would be of permanent utility? I do.
493. And it would not be merely for local people, but for the public generally? It is not for the local people at all, so far as I can see, because they can manage without it.
494. But, in conjunction with the stock routes, you consider it a necessity? I do.
495. *Mr. O'Sullivan.*] Why do you give preference to Bowman's crossing as a site for the bridge? Because it is on the main track.
496. Is there any other reason? Only because of the reserves at different places.
497. Are there any reserves near the old bridge? About 6 miles on one side and 5 on the other.
498. If they went to Gee's crossing would they have to go through private lands? Yes.
499. The Government would have to resume some land there to find accommodation for travelling stock? A great quantity. They would have to go 3 or 4 miles through Pearse's and also through Bowman's.
500. You are aware that one bridge has been already carried away at Bowman's crossing? I do not wonder at it.
501. Why? Because one thing was called a bridge which was not worth calling one. As soon as the first bit of fresh came it turned over.
502. Do you think if a bridge were constructed with iron pillars, with a good space between, to allow the logs to pass through, it would stand? Yes.
503. Do you think a safe bridge could be constructed there for £8,000 or £10,000? Yes.
504. How long ago is it since the bridge was last washed away? Twelve years.
505. Was it a very heavy flood? No.
506. It was a low-level bridge, I suppose? Yes. Two or three days after it was built I said to one or two gentlemen who were with me that when the first fresh came it would turn over like a table, and so it did.
507. A good high-level bridge, constructed with good approaches, would stand? I think so.
508. It would afford ample accommodation for travelling stock, as well as for people living in the district? Yes.
509. *Mr. Trickett.*] Could you tell us what compensation would be required if roads were taken through Bowman's and Pearse's property? I could not tell you. They would go through a lot of valuable land.
510. Do you think it would be a large amount? Yes.
511. Would it run into thousands? Yes, some thousands of pounds.
512. That is if it went over Gee's crossing? Yes; roads would also have to be made to allow Pearse's cattle to pass under the approaches—*i.e.*, bridges over the gullies and creeks which would have to be erected.
513. So that the other would be the cheaper as well as the better? I think so.

Mr. William Gillett, drover, sworn, and examined:—

Mr. W. Gillett. 8 Mar., 1890.

514. *Chairman.*] What is your occupation? A drover.
515. How many years have you been a drover? About twenty-five.
516. During that time you have frequently crossed the Hunter River? Yes.

517.

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Mr. W. Gillett, 8 Mar., 1890.

517. Where has your usual crossing-place been? Bowman's.
518. Do you know Gee's crossing? Yes.
519. Have you crossed there with stock? Yes; but it is private property, and we are not allowed to cross.
520. If a public road were made there, would it be as good a crossing as Bowman's? I do not think it would; Bowman's is the place for the bridge.
521. Do you remember the old bridge at Bowman's? Yes, I crossed it with stock.
522. Was it a great convenience? It was. It is the worst crossing-place on the Hunter, and it is the deepest water. You cannot cross sheep at any time very well.
523. Could a punt be worked there at flood time? I think so.
524. You do not think the stream is too strong? No.
525. You have crossed in punts many times? Yes; I think, however, the current would be rather strong for punts. I do not understand much about them.
526. Have you found any difficulty in crossing rivers with punts, owing to the strength of the current? Yes.
527. What is the longest time you have been delayed in consequence of the water being up? I was delayed at Bowman's ten days with sheep.
528. And how long with cattle? Two days, and then I had to go and cross at another place. Cattle have been there five and six days, and could not get over.
529. What is the nearest reserve to Bowman's crossing? There are none about there.
530. If you are stuck there, what do you do with the cattle? We pay for the feeding, or go back to Ogelby's Hill, 8 miles back.
531. If you go back 8 miles you get a reserve, but if you stop you have to pay for the feed? Yes.
532. Would a bridge with a 15-feet roadway be wide enough for cattle to cross? Yes.
533. They would take no hurt? I think not.
534. Did you know the bridge at Denman which was washed away? Yes.
535. Was it a good bridge? It did not stand very well. It was not a good bridge for cattle. It was too narrow.
536. What was the width? I could not tell you, but I know it was in a bad place. You could not get cattle upon it. There was a house close to it, and that is a bad thing for sheep.
537. In your opinion Bowman's is the best crossing-place? Yes.
538. Where have you brought cattle from—the north or the north-west? I have been bringing cattle for thirty years from all directions. I have crossed every crossing-place on the Hunter for 50 miles around.
539. There is no other place that stock could cross with more advantage than Bowman's? No.
540. If you cannot get across there you have to go round to Singleton? Yes, if you cannot get over there you have 35 or 40 miles to go further. You would have to go to Muswellbrook.
541. Is the Jerry's Plains Road still much used for stock? Yes.
542. And there is great business going on along there? Yes; I came with 2,000 sheep last night and had to go through Singleton.
543. Where were you when you first knew the river was impassable? At Muswellbrook.
544. You knew it there? Yes, and I had to come to Singleton.
545. If you know at Muswellbrook that you cannot get across you have not to go 30 miles out of the way then? No.
546. How much out of the way would you have to go? About 15 miles.
547. Have you any feed upon the road, then? No, it is nearly all lane and no reserves. There are good reserves at Bowman's.
548. Is the track from Singleton to the Bulga Road as good a track as Bowman's? No, Bowman's is the best and has more reserves.
549. In spite of the railway the stock sticks to this road? Yes, this is the proper road for stock.
550. When you have crossed at Bowman's what is the place you make for next? Jerry's Plains, and then Warkworth.
551. When you get to Warkworth you are pretty near to Singleton? 8 or 9 miles away.
552. Where do you go to from Warkworth? Straight on to Maitland, and then by Bulga.
553. You go by Warkworth in any case? Yes.
554. From Muswellbrook to Warkworth, by way of Bowman's crossing, is nearly as long as Muswellbrook to Warkworth by way of Singleton? From Muswellbrook to Bowman's is about 16 miles; from Bowman's to Warkworth is about 9 miles. That is 25 miles altogether.
555. If you go from Muswellbrook to Singleton, how much is it? 30 miles.
556. What is it from Singleton to Warkworth? 10 miles.
557. That is 40 altogether? Yes.
558. It is a long way round then? Yes.
559. If you go that extra distance that is the worst that happens to you? Yes.
560. If you are forced to go by Singleton the drawback is simply a journey of 10 miles with no reserves on the road? Yes; and it is all lane.
561. *Mr. Trickett.*] How many stock cross Bowman's crossing per week? I could not tell you that; but it is the best road for stock. All the Muswellbrook people send their stock that way, because it is the cheapest and has good reserves.
562. You are up and down the road continually? Yes.
563. Have you noticed any marked falling off in travelling stock during the last year or so? No.
564. Do you think that the road is as much used now as it has been all the time you have been on it? Yes, I think it is as much used now as ever.
565. Which method of getting stock to market do graziers and others prefer—road or rail? The road.
566. For what reason? Because the train knocks stock about, and it is more expensive.
567. The butchers prefer stock that has travelled by road? Yes, any cattle driven by road always bring a better price at the yards.
568. *Mr. O'Sullivan.*] Where do you bring stock from? From wherever I can get it.
569. How far back into the country do you go? From 100 to 500 miles.
570. Do you bring any from Queensland? Yes.

571.

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Mr. W. Gillett. 8 Mar., 1890.

571. Is this the proper route for Queensland stock, and for stock in the north and north-west? Yes, it is the proper road for any stock to Sydney or Maitland.
572. After you go over Bowman's crossing you have two roads—one to Sydney and one to Maitland? Yes.
573. And this is the proper road leading to those two places? Yes.

MONDAY, 10 *MARCH*, 1890.

[*The Sectional Committee met at the Court-house, Muswellbrook.*]

Present:—

The HONORABLE ANDREW GARRAN (CHAIRMAN).
The Hon. WILLIAM JOSEPH TRICKETT. | EDWARD WILLIAM O'SULLIVAN, Esq.
JOHN HURLEY, Esq.

The Sectional Committee further considered the proposed Bridge over the Hunter River at Jerry's Plains.

James Cobb White, Esq., sworn, and examined:—

J. C. White, Esq. 10 Mar., 1890.

574. *Chairman.*] Where do you reside? At Edinglassie.
575. How far from Muswellbrook? Four miles.
576. Have you resided here many years? About 13.
577. Are you thoroughly familiar with the stock traffic across the Hunter at or near Bowman's crossing? Yes.
578. Is it your experience that the railway has so completely taken the stock traffic off the road as practically to render Bowman's crossing of no high value? From this district about 1 per cent. of the large stock goes by rail, and the balance by road, excepting, of course, in a drought.
579. Why do the squatters give preference to the road? Because of its cheapness, and in a good season the cattle would arrive in Sydney almost in the same condition as when they left here.
580. Would it require a considerable reduction in railway rates to induce you to leave the road and take to the railway? It would in a good season, but in a bad season, of course, they have to pay the present rates rather than go by road.
581. Then all the stock fattened in this district north of the Hunter want to cross the river to get to the Sydney market? Yes.
582. But we have been given to understand at Singleton that the great need for this bridge is on account, not so much of the locally fattened stock, as the stock coming from the north and going to Sydney? All the stock coming from the north have to go by Denman, and in flood times they have to come round here and go to Singleton.
583. If they got as far as Denman, could they, by keeping to the westward of the Hunter cross to Goulburn easily? They cannot cross the Goulburn as easily as the Hunter. The Goulburn is a worse river than the Hunter in flood time. You can swim in the Hunter and get out, but you cannot in the Goulburn, because it is boggy.
584. Then it is not correct to say that the Goulburn is easy to cross in flood time? It is very incorrect.
585. And there is no open stock road that way? I think they only go that way on sufferance.
586. If a road had to be opened out there, it would have to be through private property? I believe so, but I am not acquainted with the locality.
587. There is a prescribed stock road from the north? Yes, through Muswellbrook.
588. And through Denman also? Yes.
589. Are there two roads then? Yes.
590. And reserves on both? Yes.
591. If fat stock is being brought down, the drovers know very well when they approach Aberdeen whether they can get across Bowman's crossing? They seldom come by Aberdeen. They turn off before getting to Aberdeen, and go round on the opposite side of the river, so as to utilise the bridge here.
592. On the western side? Yes, they save all the metalled road coming down. There is no metal on the other road, and more feed and reserves.
593. It is a great point to keep from the metalled road? Yes.
594. But if they knew the river was unfordable at Bowman's, they would make for Singleton? In very few cases. They would mostly remain on the reserves until they could get over the river, because it knocks the stock about going through the town of Singleton.
595. Are there any reserves upon the main road from Muswellbrook to Singleton? There are vacant spaces. I do not know whether they are reserves or not, but they can always get a feed.
596. Without paying for it? Yes.
597. What is the inconvenience, apart from the extra distance of going by Singleton? There is the metal through the town of Singleton. It is impossible when you get over the bridge at Singleton to avoid the town.
598. Then for the sake of keeping the stock in good condition on the road, it is better to go through Bowman's crossing than through Singleton? Yes. Mr. Richards buys most of the stock about here, and never thinks of sending his cattle by Singleton, but always by Jerry's Plains.
599. Is he the principal purchaser from the fattening people here? Yes, he buys about two-thirds of all the stock fattened about here.
600. Have you any personal knowledge of the quantity of stock crossing at Bowman's? No, I see a great many stock going by, but I do not stop at the river to count them. I have a good idea how many cross.
601. But if you live so near to Muswellbrook you are some distance from the stock route? I am constantly in Denman, where they pass through.
602. And they must go as far west as Denman? There is no road for them to go between Muswellbrook and Denman.
603. It is all private estates? Yes.
604. Are you of opinion that a bridge over the Hunter is required for the existing traffic? Yes.

605.

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605. Do many sheep come down by way of Denman? Yes, all except those that are trucked.
606. Will flood delay them longer than it will delay cattle? Yes, some days longer. Cattle can swim if the river is half a banker, but sheep have to wait until it is very low before they can cross.
607. Do you know anything of the relative merits of Bowman's crossing and Gee's crossing. I do not quite know the difference between them. The crossing I have been talking about all along is the one on the road between Denman and Jerry's Plains. That is Bowman's crossing. Where is Gee's crossing?
608. It is further down the river nearer to Jerry's Plains? I do not know anything about that one. That is not on the main stock road at all. I should not think you could get a much worse place than Bowman's crossing for a bridge, because it is very wide, and the bridge will be very costly.
609. There was a bridge there once? Yes; but it is not there now.
610. *Mr. Trickett.*] It was a low-level bridge? Yes; you would have to make a high bridge to get outof reach of the flood.
611. You yourself, though not an engineer, said that it would be difficult to cross? Yes.
612. Still the stock drovers seem to prefer the old place to the new one. Is there any reason for preferring Bowman's crossing, other than that it is the customary place? I do not see any objection to the other place. If they could get from the present road to the bridge, they could not have any objection to it.
613. We are told it would require a road to be made through private property? Yes.
614. Do you think there is any local necessity for a bridge apart from the stock traffic? No.
615. Do you think the people could always get into the town except in very bad weather, and then they could wait? I should think that not more than one person goes over the river a day, excepting those connected with stock traffic. Comparatively speaking, there is no traffic between Jerry's Plains and Denman.
616. They can always get into Muswellbrook or Singleton by going round? Yes.
617. Still, from your long experience of this road, you state that there is sufficient stock traffic to justify the Government in building a bridge? Yes. Until they can slaughter the cattle in the country, and get it conveyed to town in cooling cars, a bridge will be necessary.
618. What are your views as to the proposal to kill cattle in the country, to chill the meat, and send it to Sydney. Do you think it is desirable? I think it is most desirable, both for producer and consumer.
619. Is that the general opinion amongst stock-owners? I believe so.
620. If that were done the necessity for this bridge would be almost nil? Almost; unless the main slaughtering-place was at Singleton, or somewhere about there; and even then they could cross at Singleton. Of course you could not have slaughtering-places everywhere. There would have to be a main one.
621. In that case would the bridge be of utility? Only for the local traffic, because people would not hawk their stock to Sydney when they could get it killed here.
622. Have you thought as to how far these slaughtering-places should be apart? I should think they would not want to be nearer than 200 miles. That is 100 miles each way; and that is not much of a drive. If they were close together it would cut up the business, and make it too small to pay the companies running them.
623. I suppose you are of opinion, if a bridge is built at all, that it should be a high-level bridge? A low-level bridge would answer the purpose if it would stand; but I am not sufficient of an engineer to know whether it would stand or not.
624. Experience here has proved that the bridges have been washed away? All the low-level bridges we have had have gone.
625. Have you known of any great personal inconvenience to drivers of mobs of cattle, or herds of sheep, by reason of their being no bridge? Yes; I have seen drovers there for days trying to cross, and then they have had to turn back and go round to Singleton.
626. Is there any stock reserve near the river at Bowman's crossing? There is one between Denman and the crossing.
627. How many miles from the river? I do not know exactly, but I suppose about 6.
628. Then if they are stuck up at the river, the cattle have to be driven back 6 miles? Yes.
629. That is a detriment to them? It is a bad road, and in wet weather it is very heavy. There is no other reserve when they get across the river; but, of course, there is no stock coming back to use it. If they are stuck they have to go back to Denman.
630. Do you think the stock-owners would pay a toll for the use of the bridge? Yes, I should think so. We have to pay toll now to cross at Alford's.
631. They would pay whether they used it or not. Regulations could be framed to the effect that if they went within a certain distance they would have to pay toll? I think it would be quite fair. It would be far better to pay a toll than to go around 20 miles.
632. It has been stated by witnesses in Sydney that if a bridge were erected and a toll imposed, the toll would not be worth collecting, as so little stock pass over,—Is that correct? I should not think so. You could charge upon all stock going within a certain distance of the bridge. I suppose you could prevent owners of land from allowing stock to go through their property.
633. You stated a short time ago to the Chairman that you had a pretty good idea of the number of stock that went over the river,—What is your idea as to the number crossing per week? I have seen something like 1,000 fat cattle cross there in one week.
634. What about sheep? I have seen 4,000 stuck at the river at one time.
635. Was that during the late rains, or some time ago? About eighteen months ago.
636. Have you noticed any great diminution in the stock traffic there since the railways were opened? There is no perceptible diminution.
637. We are told that there has been a certain diminution in the stock traffic, but that it is attributable to bad seasons,—I suppose stock has fallen off a good deal in this district as in others? Bad seasons are the times when the railways ought to pay, the roads are then so badly off for grass that the stock go by rail. I truck all my stock in bad seasons, but now I send them by road.
638. You only use the railway when you are compelled to by the difficulty of travelling the stock? That is all.
639. *Mr. O'Sullivan.*] I suppose you may be considered as one of the large stock-owners in this district? I have about 5,000 cattle, usually.

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J. C. White, Esq. 10 Mar., 1890.

640. Can you state how many cattle you send every year to the market? It depends on the season. Some seasons I send 6,000 and others not more than 2,000.
641. I suppose about 3,500 would be a fair average for ten years? About 4,000 a year, taking one season with another.
642. Are there many other stock-owners in this region who send about the same number as you do? There is Mr. Edward White, of Martindale.
643. But away to the north-west? There are plenty up there who send a good many more than I do.
644. You always take this road when grass can be obtained? Yes.
645. Do you think a bridge 15 feet wide would accommodate the stock traffic? Yes; I do not see why it should not.
646. You know the railway bridge at Singleton? Yes.
647. That is 14 feet wide on the traffic portion; I suppose a bridge as wide as that would do? Of course the cattle would have to pay toll, whether they passed the bridge or not. Cattle would not always have to use the bridge—only in floods,—and it would be quite wide enough for sheep at any time.
648. You said just now that you had to pay toll to Mr. Alford? Yes.
649. What is that for? Because the river bank is washed away, and we have to go about 100 yards on his land to find a crossing.
650. How much toll do you pay him? £1 for 200.
651. If you cross Mr. Alford's land, do you go off the ordinary stock route? Yes, for about 100 yards.
652. Then, if this bridge were constructed at Bowman's crossing, would it divert the toll? Alford would not get any of that, because it is a better crossing than that at Jerry's Plains. In preference to crossing at Jerry's Plains we go that way, and pay him the toll. The only reason for going there is to get a good crossing.
653. Why do you keep to the west bank of the river, and cross at Denman, instead of going across the Goulburn? There is no road.
654. The reason is, there is no stock route across the Goulburn? Going from here you would keep on the other side of Denman.
655. But the Goulburn runs close to Denman, does it not? About a mile away; but the lower Goulburn can never be crossed in flood-time. You cannot cross it for 3 miles up, except when the river is low, because it is so boggy.
656. Then there are two reasons why you do not cross the Goulburn—the first is, that there is no stock route across it, and the second is, that it is a dangerous crossing? Yes.
657. Then the natural stock route, which has been used for years past, is the one going by way of Bowman's crossing? Yes.
658. If you cross at Jerry's Plains, you have to deviate from the stock road? You cannot cross at Jerry's Plains; there is no road.
659. You cross at Bowman's? I have not a plan before me, but that is what I should say.
660. But if a bridge were constructed at Jerry's Plains, you would have to deviate from the stock road to reach it? Yes.
661. Would that lengthen the journey to Singleton or shorten it? It would not make more than a mile difference.
662. Do you know the crossing-place at Gee's? No. I have often crossed from Plashett's Homestead to Jerry's Plains. If that is Gee's crossing I do not know it by that name.
663. Do you think it would be a difficult work to put a bridge over Bowman's crossing? It would be rather expensive to make such a long bridge there.
664. What is the width of the river? I could not say to a hundred yards. I know the width of the water; but the banks are very low on either side for a long way back.
665. I suppose the banks have been worn by the river;—how long did the low-level bridge erected there last? I suppose about twelve months.
666. Do you know the reason why it gave way? I heard that it was because the bolts had heads and tails, and no middles.
667. And the bridge was badly constructed? Yes.
668. Do you not think a strongly constructed bridge, about 10 feet or 15 feet higher would be sufficient to ensure you against floods? It might stand, but I do not know sufficient about the matter to give an opinion.
669. Can you give a rough estimate of the number of stock which cross there in a year? I have been reading Mr. Alford's estimate for 1889. I think his estimate must be a long way under the right number. He numbers the cattle at 13,507, the sheep at 35,000, and the horses at 84. Fully 84 horsemen must have gone over the crossing in a month or two months in charge of stock. He gives 84 horses for the whole year. I have known of mobs of more than 84 go over last year at one time, so that he must be out of his reckoning. I should think that 20,000 cattle must have gone that way last year.
670. *Mr. Hurley.*] Then, practically, if this bridge were constructed at either of the places named, it would be merely in the interests of travelling stock? That is all. If people want to go in for the doctor or the post, there is a boat which they can use.
671. It would be little used by agriculturists, or any other class? If a bridge were made for agriculturists, a road would have to be made as well, because it is in such a bad state.
672. Leaving stock out of the question, there is no immediate necessity for a bridge at the present time? No; and there will not be at any time that I know of.

Mr. William Wood, drover, sworn, and examined:—

Mr. W. Wood. 10 Mar., 1890.

672½. *Chairman.*] What is your occupation? A drover.
673. How long have you been engaged in that business? About six or seven years.
674. Where do you mostly bring cattle from? Off the Hunter.
675. Cattle fattened in the district? Yes.
676. What is the natural stock road to the Sydney market for the cattle you drive? By Jerry's Plains—Bowman's crossing.
677. Do you know Gee's crossing? Yes.
678. Did you ever cross with cattle there? No; I have crossed on horseback. 679.

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679. Can you judge whether that is as good a place for a bridge as Bowman's crossing? I think it should be better for cattle. Mr. W. Wood. 10 Mar., 1890.
680. But it would need a special road to be made for it? Yes; from Bowman's crossing, through Mr. Pearse's private property, and through Mr. Alford's.
681. If a bridge were built there it would be as convenient for stock traffic as one at Bowman's? More so.
682. And it would give the Jerry's Plains' people other access to the Liddell station? It would.
683. Do you think it would suit the district better than one at Bowman's? Far better.
684. Have you any idea of the quantity of cattle which crosses the Hunter at Bowman's in a year? I should think between 20,000 and 25,000.
685–6. How often in the year do you think people are stuck up because of the floods? I could not say. I have been stuck up twice at Bowman's.
687. How long had you to wait? A day and a night, and I had to swim it next morning.
688. Do you think the delays caused are so great that the country would be justified in going to the expense of a bridge? I do.
689. As a practical drover, do you think a 15-feet roadway would be sufficient? Yes, for stock, because you would have only to cross stock in time of floods. You could cross below when the river was passable.
690. Would there be much difficulty in getting the cattle to face the narrow roadway? Not with gradual approaches on each side.
691. Do you think the persons interested in stock would willingly pay a small toll to have the bridge available in bad weather? I should think so. It would be to their interests to do so.
692. If it pays them to go through a man's private land for a short distance it would pay them still better to have a bridge in wet weather? I should think so.
693. The cost of the toll would be less than the delay of three or four days? Yes.
694. And in the case of sheep a delay of more than a week? Yes.
695. You do not think the effect of the toll would be to send the traffic away from the district? No.
696. When you are once across the river at Bowman's is there anything to stop you on the road to Sydney? Yes; there are two rivers—the Branch and the Colo.
697. If you could not get across here you could not get across there? If you could cross the Hunter you could cross them.
698. How many days will it take between Bowman's and the Colo? About ten days.
699. Is that the first obstruction? No.
700. Which is the first? The Branch.
701. How far is that from Bowman's? Between 35 and 40 miles.
702. So that if there were a bridge at Bowman's, and the water was up, you would have five days for the water to go down in before you reached the first difficulty beyond Bowman's? Yes.
703. And except in continuous rainy weather you could always get across? Yes.
704. Is there any bridge over the Colo? No.
705. Is it often up? Yes.
706. Are you often delayed there? I have been delayed there once. You run a great risk in swimming cattle there, because of the current. You have to pay a woman, who keeps a boat there, to enable you to get across.
707. And you have to pay as much without a bridge as you would with one? More. You have, perhaps, to pay £1 or 15s.
708. What do you think would be a fair toll for a bridge? 1d. per head. Stock-owners would willingly pay. It would be to their interests to do so.
709. You say that as a practical man? Yes.
710. Do you know anything about crossing the Goulburn River, near Denman? Only on horseback.
711. Is it a boggy crossing? Yes; it is very bad.
712. You think that the taking of stock round Denman and crossing the Goulburn instead of the Hunter is not practicable? No.
713. You cannot avoid this bridge by adopting that route? No.
714. The better plan is to make a bridge over the Hunter? Yes.
715. And that would be an immense convenience to this district? Yes.
716. *Mr. Trickett.*] Do you meet with many difficulties between Bowman's and Gee's, and Singleton, after you cross the river? We do not go near Singleton, but by Jerry's Plains.
717. You go by way of Warkworth? No; you can miss Warkworth. If there is a bridge you can miss Jerry's Plains also.
718. You do not have to cross the Hunter River again? No.
719. Would it be an advantage if you could get through Singleton? No.
720. The reason I ask is because some of the witnesses have spoken of a bridge over Maison Dieu? I know it.
721. That bridge would only be for the benefit of the Jerry's Plains people who want to get into Singleton? Yes; it would be of no benefit to stock at all. A bridge at Brunker's crossing would be of more advantage to stock; but that is out of the way too.
722. Do you know the number of stock which travel? Between 20,000 and 25,000 cattle a year. I could not say how many sheep, as I have not had much dealing with them; but in my time I have seen 12,000 or 15,000, or more.
723. At any rate, a large number of sheep go over Bowman's? Yes; all the sheep cross there, unless it is flood-time, and then we have to drive 75 miles round to get across the Singleton Bridge.
724. The Stock Inspector said that eighty horses went over in 1889;—is that an under-estimate? Yes; he would have been nearer the mark if he had said 800.
725. It would take over eighty horsemen to deal with the cattle? I should say it would take close on 200 horsemen to deal with the cattle and sheep.
726. *Mr. Hurley.*] Have you travelled to Sydney many times? Yes; over 100 times.
727. During that 100 times you have only been detained twice by the river being up at Bowman's crossing? Yes; but if I had stopped until it went down I might have been there a week. I risked my cattle, my horses, and myself.
728. But it is a fact that you have only been detained twice? Yes.

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Mr. W. Wood. 10 Mar., 1890.

729. Do you think it is absolutely necessary, in the interests of those connected with stock, that a bridge should be built? Yes; if I had stayed every time the river was up, I might have been detained fifty times. I have gone by way of Singleton Bridge, 75 miles round.
730. How often have you had to do that? Three times.
731. You have done that three times in seven years, and twice you have been detained at the river at Bowman's? Yes.
732. In your conversation with pastoralists and others, have you ever heard anything said as to the probability of chilled meat being conveyed to market in cars? Yes.
733. Do they look upon it as being more advantageous to the consumer and producer to have it conveyed by that means? Yes.
734. If the idea is carried out, will there be any necessity for a bridge? I do not think there would.
735. If facilities are given by the Railway Department for conveying meat to market, it would be better for the purchaser? It would.
736. And it would be more lucrative to the producer? Of course it would; the meat would be fresh and the cattle would not be harassed on the road.
737. Therefore there would be absolutely no necessity for the erection of a costly bridge? I do not think there would.
738. *Mr. O'Sullivan.*] Have you ever had to pay toll to Mr. Alford? Yes.
739. How often? Every time I go through.
740. Why do you cross his land? Because you cannot avoid it;—you must cross it. There is a crossing, but you cannot get up the bank, because it is all washed away. The water under the bank must be 12 or 13 feet deep.
741. You cross his land to get to a better crossing-place on the river? Yes.
742. What is the width of the crossing-place which you get to on the river after paying Mr. Alford? It is a very wide place, over 100 yards, but there is a good beach across.
743. What is the width of Bowman's crossing? About 200 yards.
744. What is the width of Gee's crossing? Not half that width.
745. Which do you think would be the best place to fix the bridge? I believe Gee's is the best place.
746. Would you have any reserves along that route? Not until you get across the river.
747. Will the system of chilled meat do away with the necessity for droving? Not altogether.
748. You will still require to drive cattle to the places where the meat is chilled? Yes.
749. Therefore, you will want these stock routes and bridges? Yes; that is if we are to drive stock, but if there is no stock going that way we should not require it.
750. *Mr. Trickett.*] You could not say whether it would be absolutely necessary or not until you knew where the stock would be slaughtered and chilled? No.
751. Supposing the stock were slaughtered at Liverpool Plains, there would be no necessity for driving beyond this place? No, not fat stock.
752. *Chairman.*] So far as the fat cattle of this district are concerned, the owners would not start them if they knew the river was up? I have started them when the river was up, expecting it to be passable when I got there, but it was higher.
753. But still you started in the expectation that it would be down? Yes.
754. If you knew the river were up you would not start? I have started when it was up, but it was inclining to fall. The night we left we had heavy rain.
755. Most of those who fatten stock in this district are within 20 or 25 miles of Bowman's? Yes.
756. And they would know pretty well the state of the river? I should think so.
757. Then it is really more for the through stock from the north that you want the bridge than the local stock? I should think the local stock want it as well as the north stock.
758. But they are not so likely to be stuck up? If there is a good market the owner likes to get his cattle there quickly.
759. But now that the markets are supplied by rail, the variations in the market are not so great as they used to be? I could not tell you.
760. *Mr. Trickett.*] Do you know of any low-level bridges which have stood the floods? I know of only one low-level bridge, and that was at Singleton, and it did not stand.
761. And the one over the Hunter, near Jerry's Plains, was washed away? Yes.
762. It was badly constructed? Yes, the piles were only 2 feet in the ground.
763. Do you think it desirable to erect a low-level bridge? No, I do not think it would stand.
764. Is the current very strong near Bowman's? Yes.
765. *Chairman.*] Do you think it would be possible to work a punt if the river were up 10 or 12 feet? I should think so.
766. The current would not be too strong? I do not think so.
767. Do you think a punt would do instead of a bridge? It would not be so convenient for stock. You could not punt stock very well. You would have to swim them.
768. But you could go across yourself in a punt? Yes.
769. *Mr. O'Sullivan.*] How much toll do you pay Mr. Alford? 10s. for 100.

Mr. Charles Smith, drover, sworn, and examined:—

Mr. C. Smith. 10 Mar., 1890.

770. *Chairman.*] What is your occupation? A drover.
771. How long have you been a drover? Nearly thirty years';—over twenty years in this district.
772. Do you mostly take cattle fattened in this district? Yes; I have taken 2,000 in one year.
773. In the course of your journeys you have met a great many drovers who have come with cattle from the north? Yes.
774. You know their trade as well as your own? Yes.
775. Do you think the quantity of stock now crossing the Hunter is large enough to justify the building of a bridge? I think so. I think there would be more stock go that way if they had a bridge.
776. Which way do they go now? The best way they can. They have to go wherever they can cross best.
777. Where have you always crossed? At Jerry's Plains, and Alford's.
778. Do you know Gee's crossing? No; not well. I know there is a crossing there. 779.

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Mr. C. Smith. 10 Mar., 1890.

779. Do you think it would pay stock-owners to pay 1d. a head to cross their cattle over a bridge? Yes.
780. Even if they did not use the bridge? I think so. It would pay them well. They might be stuck up there for four days. The cattle get knocked about and get into a state of perspiration. They are put into the water, and when they get on the opposite side the chances are that some of them die. When they get into the market they die as black as a coal, and are almost unfit for use.
781. They get chilled? Yes.
782. You think the cost of the delay is a great deal more than the 1d. a head? Yes.
783. If you were only delayed twice in the year it would pay you to give 1d. a head? I would freely do it myself.
784. For all you cross during the year? Yes.
785. Do you think 20,000 head of cattle is an excessive estimate of the number crossing Bowman's per annum? I could not tell you exactly, but I have been given to understand by a constable that he had instructions from head quarters to make an entry of all stock which passed through the valley. They could not pass without going from 200 to 300 yards of his house.
786. What was his estimate? He did not tell me; but he told me he could not understand the estimate given into the Government. He was prepared to show from his books that the number of cattle and sheep which had passed were far more than what were given in to the Government.
787. Presuming 20,000 cattle crossed at Bowman's every year, would it pay to pay 1d. a head on the whole number? I think so.
788. What is your next difficulty after crossing Bowman's? None that I am aware of.
789. One witness says the Branch and the Colo are troublesome? I have never had any trouble.
790. Is the Colo River difficult? Not very.
791. That is the greatest difficulty? Yes.
792. If there were a bridge here you would consider the route to Sydney practically open in all weathers? I would.
793. *Mr. O'Sullivan.*] Which ford have you been in the habit of using? Alford's.
794. Alford's lies between Bowman's and Gee's? I know nothing about Gee's.
795. Alford's Crossing, then, is nearer Singleton than Bowman's? Yes.
796. How far is it from Bowman's? I could not tell you exactly, but it is a good way.
797. You say you drive about 2,000 stock a year? I have done, but not a present.
798. Would that be a fair average for a year's work if you were fully employed? Not for me.
799. Do you think 1,500 would be a fair average? Some go by train.
800. How many drovers beside yourself follow this route? A great number. They are nearly all away now with stock.
800½. How many do you think? I could mention a good few. There are five or six here now. I know of one or two who were drowned at the crossing.
801. Do you think there are twenty drovers using that road every year? I daresay, but I would not like to swear it.
802. I suppose we can take it as a fair estimate that 20,000 or 25,000 cattle are driven down that stock route every year? I should say so.
803. *Mr. Hurley.*] Would this bridge, if erected, be used by any other class but drovers? I think so, by people going to and fro.
804. By farmers? Yes, and by Denman people.
805. Denman people would use the bridge in order to reach where? Going from Denman to Jerry's Plains.
806. Is there much trade between Denman and Jerry's Plains? There is not much at present, because they cannot get there.
807. Do any drays travel along that line now? There would be if a bridge were erected.
808. But do they do it at the present time? They cannot do it, it is impossible.
809. Practically the bridge would be in the interests of the persons interested in stock? And the general public as well.
810. Have you heard any talk as to the probability of meat being killed beyond here, or in Muswellbrook, and conveyed by rail to market? No.
811. Supposing that were done, would it not be carried to market in a better state? No, I don't think so.

Reginald White, Esq., sworn, and examined:—

R. White, Esq. 10 Mar., 1890.

812. *Chairman.*] What is your occupation? I manage my father's estate.
813. Do you fatten cattle on the estate? Yes.
814. Do you send them to the Sydney market or sell them on the ground? We have lately sold them on the spot to Mr. Richards.
815. Then you do not trouble yourself about the droving? Yes, we do. Two or three years ago we did not sell any through Mr. Richards, but had to send them all by road.
816. If you are now selling to him, he takes the responsibility of the droving? Yes, but we would have to keep them for him if he could not get them across the river.
817. How far are you from the crossing? About 15 miles.
818. You would not start your cattle if you knew the river was impassable, so that the want of a bridge is not so much inconvenience to you? Well, we would be losing the market.
819. How many days' journey is it between here and Sydney? Fourteen.
820. Does the market keep steady for fourteen days? I think so.
821. Does not the market sometimes go up and down, like the river? Yes.
822. If the market were high, and you were fourteen days' journey from it, you could not guarantee to deliver the stock before it fell.
823. You have no knowledge of the quantity of stock coming down by rail? No.
824. You could not tell whether a glut was likely to arise in fourteen days? No.
825. Excepting for the risk of losing the market, the keeping of the stock for two or three days on your land would not be any material hardship? No, not for that time, but if you keep them back you want other cattle to come on. The other cattle would come in and fill our paddocks and eat us out.

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R. White, Esq. 10 Mar., 1890.

826. If the rain was so heavy that you could not cross at Bowman's, you would not get the other cattle round very quickly? No.
827. So that these very heavy rains check traffic altogether? Yes.
828. It is a check all along the line? Yes.
829. Supposing you were sending stock to market, would you be willing to pay a toll of 1d. per head for a bridge? Yes.
830. Whether you use the bridge or not? Yes.
831. Do you think the other stock-fatteners in the district would be willing to do the same? I think so.
832. Do you think the estimate of 20,000 to 25,000 cattle crossing per annum is a fair estimate? Yes; we alone sent 4,000 within the last twelve months.
833. Have you ever heard your father speak on the subject of a toll? No; not lately.
834. Like most of the people of New South Wales, you would prefer a bridge without a toll? Of course.
835. But you would rather have the toll and the bridge, than no bridge and no toll? Yes.
836. And that, even though you only live so short a distance from the crossing, and need not start your stock unless you like? Yes.
837. Even then you would rather have the bridge? Yes.
838. From what you know of Mr. Richards, do you think he would pay toll? Yes.
839. When he buys he wants to get stock down pretty quickly? Yes. I know of an instance in which he had cattle drafted at my father's place, and the river came down, and we had to let him keep his stock there. I think he was a week before he got them away, and no doubt that was a great inconvenience to him.
840. How often have you known Mr. Richards stuck up after starting with stock? That is the only time I know of.
841. Then the number of times the stock are delayed in the course of a year are not so many, but the inconvenience is very great each time? Yes.
842. I suppose the river is passable about ten months in the year? Well, it has been, but in wet seasons it will be more frequently blocked.
843. Would you like to see more wet seasons? Yes.
844. Would you like to see the river impassable? Not altogether.
845. Are you well acquainted with the stock traffic from the north? No.
846. You only know the local traffic? Yes.
847. *Mr. Trickett.*] Do you know anything about the sheep traffic? I have seen sheep go through Denman very often.
848. Have you heard of them often being stuck up? Yes; I have heard of lots of sheep being stuck up at Bowman's, but I have never seen them.
849. Sheep are more trouble to get over a river than cattle? Yes, it must be a very wide crossing to get them across properly, and there must not be any banks about. If they get on each other's backs they drown.
850. Do you think Bowman's or Gee's the best place to cross the river? I don't know Gee's at all.
851. *Mr Hurley.*] Do you think the bridge, in the event of its being constructed, will be used by many people besides drovers? I think so. In dry weather teamsters sometimes go that way.
852. What do the teams convey? Merchandise.
853. There is no wool conveyed to market? No.
854. Do you know anything about the routes spoken of across the Goulburn beyond Denman? Yes.
855. Do you think that would be a suitable route? No. I cross the Goulburn almost every day. You never put a valuable horse in there without being liable to get him drowned. It is very boggy. As long as he can swim he is all right. As soon as he gets a footing he is bogged.
856. Then the difficulties there are more than at the other places named? Yes. Besides, if you go that way you have to cross Gregg's Creek, which is more boggy, I think, than the Goulburn.
857. Would you prefer to have meat conveyed to market in cool cars, than by means of the present mode of driving? Yes.
858. Are you likely to avail yourselves of reaching market if it is introduced? Yes.
859. Then that bridge, excepting by a small number of the population, would not be used very much? I do not think it will be used so much when the chilled meat process is carried out.
860. *Mr. O'Sullivan.*] I suppose if the crossing over the Goulburn had been available to drovers, it would have been used and a track laid out. It goes through private property, and it would cost a lot of money to open a road.
861. But it has not always been private property. Do you not think a track would have been laid out before the ground was sold by the Crown? Of course it could have been laid out. There were not many cattle going that way when the ground was first purchased, so that it was not necessary to open one.
862. Do you think the cattle drovers generally, or those whom they represent, would be willing to pay a toll if the bridge were constructed? I think so.

Mr. Michael M'Taggart, drover, sworn, and examined:—

Mr. M. M'Taggart. 10 Mar., 1890.

863. *Chairman.*] What is your occupation? A drover.
864. How long have you been a drover? Going on for nine or ten years.
865. Do you take down cattle mostly fattened in this district? Yes, from here to market.
866. Have you brought cattle from the north? Yes.
867. And crossed them at Bowman's? I have not crossed them at Bowman's, but my brothers have. I have taken local cattle and crossed them at Bowman's.
868. How often have you been stuck up with the river? Not many times myself, but I know there are plenty who have been.
869. Do you think it will be worth while for the drovers to pay 1d. a head to cross their cattle over a bridge rather than do without it? I believe it would.
870. As soon as the river begins to fall, I suppose you are in a hurry to get across? Yes.
871. Do you find that you damage the stock in rushing them over the river? Yes, and it will damage cattle.

872.

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872. In what way? They get knocked about.
873. Do they suffer at all from getting wet? They do in winter time, when it is cold.
874. They fall off in condition? Yes.
875. But you have never had any of them die from getting cold? Not from swimming the river, but they go off in condition.
876. They suffer a great deal more than 1d. a head? I believe they do.
877. Do you think the traffic is sufficient to justify the building of a bridge? Yes, the traffic to the bridge would go from both roads if the river were up.
878. Do you think a 15-ft. roadway would be sufficient to get cattle across? Yes.
879. Would you only want it when the flood was up? That is all.
880. And you could push them across a roadway of that breadth? Yes.
881. You know the bridge at Singleton? Yes.
882. You know that stock often cross there? Yes.
883. There is no great difficulty? I do not think so.
884. *Mr. Trickett.*] Have you ever seen sheep stuck up at the river, and unable to cross? Yes.
885. Often? Not very often, but I have seen them. I have known them stuck up a few days, perhaps a week.
886. Are many sheep driven along that road? A good many.
887. In mobs of how many? I could not say, but I have known a good many come down.
888. When did you see the last mob? I could not say that I have seen any sheep going across the river since the last flood. That is within the last two months. They could often be there without my knowing any thing about it.
889. Have you not met or passed flocks of sheep on the road frequently? Yes; but I have not seen any sheep stuck up since the last flood.
890. When was that? Almost within the last month or so.
891. But you used to see them before that? Yes; I have known them stuck up at the river two or three days, and then, when they started to cross, they would run a great risk by swimming.
892. I suppose the bridge would be more used for crossing sheep than cattle? Yes.
893. Sheep are always difficult to get across water? Yes; cattle could walk when sheep would have to swim.
894. And your difficulty is to get them to take the water? Yes.
895. Could you tell us what number of sheep cross in a year? No.
896. How many have you seen on the road at a time? Of sheep travelling homewards there are generally from 1,500 to 2,000 in a lot.
897. You have seen droves of sheep of that number? Yes.
898. What would be a fair toll to charge for sheep crossing the bridge? I could not say.
899. *Mr. O'Sullivan.*] Do you know the crossing at Krust's lane? I do not know the crossing by that name.
900. Do you know any other crossing between Bowman's and Gee's? No, I do not, not for stock. The only crossing I know of is at Mr. Pearse's place.
901. That is called Gee's crossing, is it not? Yes, that is the only one I know of.
902. Were you one of the local residents who signed a memorial in favour of Bowman's crossing for the reasons stated? What was that for?
903. It says here, "In 1883 Mr. Gould forwarded a memorial from the residents in favour of a bridge at the old site (Bowman's crossing), because (1st), it was well known; (2nd), it was a direct route; and (3rd), that at that site only the direct expense of a bridge would be required." Were you one of those who signed that? I think I did sign something of that kind, but that was before this bridge at Gee's crossing was thought of.
904. You give your preference now to Gee's crossing? Yes.
905. What sort of a road leads from the stock route to Gee's crossing? Does it go over hills and gullies? There are hills and gullies down either ridge, but the traffic would go on to the bridge from both roads.
906. Did you sign a petition in 1887, asking for the re-erection of a bridge at Bowman's crossing? I could not say. Some of my brothers might have done that.
907. *Mr. Hurley.*] How many times do you think you visit Sydney with stock in a year? Do you go there six times a year? Some years I may go more, and some not so much.
908-9. Have you been there five times a year during nine years? I believe I have.
910. How many times have you had to remain at the river with your stock—Have you been delayed ten times—Do you think you have been delayed five times? I could not say that I have.
911. Could you say whether you have been delayed over five times through the river being up? Yes; I believe I could.
912. You have been delayed more than five times, but you are positive you have not been delayed ten times? Not during the year.
913. Of course you would not be stuck up ten times during a year; but have you been delayed at that river ten times in nine years—Have you been delayed once a year? It is like this; I am not going in every year.
914. Have you not gone to Sydney a score of times, and not been delayed by the river? Yes.
915. Then in ten years you may have been delayed ten times. Have you been delayed more than ten times in nine years? I could not say that I have; my brothers have been delayed more than I have.
916. In nine years you have not been delayed more than nine times, and you have been to Sydney with cattle at least 100 times in that nine years? Yes; somewhere about that.
917. Is that route used for any other purpose than for stock. Have you seen teams upon it? I could not say that I have seen teams, but I have seen other vehicles—carts and buggies—coming from Muswellbrook and that part of the district.
918. Light travelling? Yes; I could not say there have been teams travelling there.
919. The absolute necessity of this bridge is for the benefit of travelling stock? Yes, and for the traffic from Jerry's Plains to Muswellbrook, and Muswellbrook to Jerry's Plains.
920. Looking at the matter as a general tax-payer, would you feel warranted in recommending the construction of a bridge to cost £20,000 for the benefit of stock-growers? (No answer.)

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Mr. M. M'Taggart. 10 Mar., 1890.

921. Have you ever given any consideration to the question of conveying stock to market by frozen meat cars? (No answer.)
922. Have you ever heard anything about that system being likely to be brought into operation? (No answer.)
923. Have you ever thought about it? I do not understand what you mean.
924. Have you heard squatters or drovers speak about the building of railway cars to convey dead meat to market in a frozen condition? No; not that I can recollect.

Alexander Rawson, Esq., manager of Woodlands, sworn, and examined:—

A. Rawson, Esq. 10 Mar., 1890.

925. *Chairman.*] What is your occupation? Manager of Woodlands.
926. What is the area of that property? About 9,000 acres.
927. How far is it from here? About 17 miles.
928. Between here and the Hunter? It is on the Hunter.
929. Do you send much fat stock to market? Yes.
930. On your own account, or do you sell it on the place? I send a great many in on my own account.
931. Where do you cross them? At Bowman's.
932. Have you been much inconvenienced at any time by the want of a bridge? Not myself.
933. Do you think there has been any inconvenience in the district? Yes; great inconvenience.
934. Sufficient to justify the Government in going to the expense of a bridge? Yes.
935. Would a bridge with a 15-feet roadway be sufficient for your purposes. Could you get your cattle across? You could; but it would be very narrow, I should think.
936. You would rather put them across a bridge of that character in flood-time, than keep them standing? Yes.
937. You would have no difficulty in crossing? You would have difficulty, but it would be better than waiting for the river.
938. Would you be willing to pay 1d. a head on your cattle if there was a bridge there, whether you crossed the bridge or no? Yes.
939. If you crossed 6,000 cattle in a year, and you only used the bridge for 500 cattle, would you be willing to pay on the whole quantity? Yes.
940. At 1d. per head? Yes; when the river is up.
941. I mean whether the river is up or not? Not when the river is down.
942. You would only pay when you wanted to use it? Yes.
943. And you would not at other times? No.
944. Do you think that would pay for a bridge under those circumstances? I do.
945. You only want to use it twice in a year? It has been wanted ever since I was there, or nearly so.
946. Once or twice in a year? Since May it has hardly been passable, except for vehicles.
947. But this is an exceptional year? I have only been here fifteen or sixteen months, and my experience is that it is badly wanted.
948. *Mr. Trickett.*] You said just now that personally you had suffered no inconvenience? With stock.
949. Your drovers have been able to get over? I have been able to cross, but I have seen numbers of drovers delayed for days, and then they had to swim their stock at a risk.
950. Have you ever seen any sheep delayed? Yes, I have seen sheep which have had to turn back and come round by way of Muswellbrook.
951. What quantities of sheep have you seen there? 2,000 or 3,000.
952. In one mob? Yes.
953. Can you say what quantity of sheep have gone over there during the time you have been here? No, I could not.
954. The property you manage adjoins Bowman's crossing, does it not? No; it is a bit above it. It joins Harrowfield.
955. The traffic is constantly under your observation? Yes, our property is on both sides of the river.
956. Could you not give us some idea of the number of sheep that cross? No, I could not. I do not see half the sheep that pass.
957. Will there be a mob a week? Yes, when they can cross, but there are not so many coming now, because they cannot cross.
958. Have you noticed much other traffic besides cattle and sheep crossing the river? There would be lots of other traffic if they could cross.
959. Of what character? There are vehicles constantly going between Jerry's Plains and Denman, but they have not been able to cross for months.
960. Which do you think the best crossing—Bowman's or Gee's? I could not state.
961. *Mr O'Sullivan.*] Are you well acquainted with the various crossing places on the river? No, I know little about them.
962. Are you anywhere near what is called Gee's crossing? No, I am higher up the river.
963. Do you know Gee's crossing? No.
964. Do you know a place where there was once a wine shop? I have heard of it, but I have never been there.
965. Do you know Krust's lane? No.
966. The only crossing place you are acquainted with is Bowman's? Yes.
967. How wide do you consider that is? I could not say. It is a good width in flood-time.
968. Is it 200 yards wide in flood-time? Hardly that, but I have never seen the crossing at top flood. I have often seen it when it has been swimmable, and I have had to swim it with a horse.
969. Do you know any better place than Bowman's? Not myself.
970. You have not been there long enough to be thoroughly acquainted with the place? No, I am not acquainted with the crossings.
971. *Mr. Hurley.*] Why do you not avail yourself of conveyance by rail to market? It is too expensive.
972. What does it cost you per day to get your cattle to Sydney, by droving? That all depends.
973. Give us an average? I have never sent any stock to Sydney. I always send to Maitland.
974. You know the cost of sending 100 bullocks to Sydney? From our place we generally give the drover £30 a trip.

975.

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A. Rawson, Esq. 10 Mar., 1890.

975. That will embrace a good number of cattle? Yes, any number you like up to 200.
976. Have you given any consideration of sending stock to market by means of frozen cars? No.
977. If the Commissioners were to introduce a system of frozen meat cars, whereby you could reach the market safely and expeditiously, would it not be to the advantage of the producer, provided that the freights were of such a character that they did not come too much beyond the coast of droving? Yes.
978. If that were done would the necessity for a bridge exist? They want the bridge all the same.
979. Why? Heaps of stock must constantly go that way, no matter what methods are adopted of sending stock away by rail.
980. You will not be forced to the position of using any other facilities for market than the old system of *driving* over land? We may be. I cannot say. I think a bridge will always be wanted there, because *there will* be always stock going in.
981. Leaving stock out of the question, will it be used for any other purpose? Yes.
982. By large numbers? Yes, constantly and daily.
983. What for? For people travelling backwards and forwards.
984. Where to—between what places? Denman, Singleton, and Merriwa.
985. Do drays travel on that line now? They do not now, because they cannot.
986. Have they ever done so? Yes; when I first came there they were constantly driving.
987. Going to where? To Denman.

James Cobb White, Esq., sworn, and further examined:—

J. C. White, Esq. 10 Mar., 1890.

988. *Chairman.*] What is the cost of sending stock by train from Muswellbrook to Sydney? About £5 11s. 6d. per truck.
989. How much per head would that be? It depends on how many you put in a truck.
990. Say per cwt.? You can put 77 cwt. in a single truck.
991. Take it by bullocks? I send about eleven bullocks in a truck, but they would only be of moderate size, and would weigh about 7 cwt. If you put larger cattle in, you only put nine in a truck.
992. What is the cost of sending them by road? Mr. Richards pays £20 for sending 200 head from here to Riverstone. I pay £25 from here to Sydney,—that is about 2s. 6d. per head.
993. What do you estimate as a fair allowance for damage by train compared with travelling by road? Going by road the cattle deteriorates to a certain extent, but the butchers in Sydney prefer them to cattle travelling by train.
994. How much more is a bullock which travels by road worth than a bullock travelling by train? If it comes by train it loses nothing in weight, but if it comes by road it does.
994½. So that the two systems are pretty well balanced? The only difference is between the road and rail charges.
995. Will 2s. 6d. cover the difference? There is a difference between 2s. 6d. and 11s., of 8s. 6d. That is where the difference is.
996. You think there is a saving of 8s. 6d. in sending by road? Yes.
997. And unless the drought is very bad it is worth while to stick to the road? Yes. I sent by train all through the drought, and when it broke up I sent by road.
998. How many times in the course of the last ten years would the difference of 8s. 6d. be met by the drought? Seven years out of ten.
999. Then during only three years out of ten would this bridge have been of great importance? It is only in seasons when we can send cattle by road that the bridge is of importance.
1000. In spite of the fact that during the last ten years the bridge would have only been required for three years, you think the stock-owners would pay the toll of 1d. a head for a bridge? The last ten years have not been ordinary years. We have had a general drought during the last ten years. In ordinary years you would only, perhaps, want the train one year out of the ten.
1001. You think the chances for the next year are that the people who want to use the bridge would be willing to pay for it? Yes; if we cannot get our meat conveyed to Sydney in frozen cars. If we get that we shall not want the bridge, as far as I can see. The local traffic will only want the bridge.
1002. *Mr. Trickett.*] If the bridge went by way of Gee's crossing, the land would have to be resumed through Mr. Pearse's property? Yes.
1003. Could you give us any idea of what the cost of the resumption would be? About 30 acres would be required; but it is not the cost of the land so much as the damage done by cutting him off from his water frontage. I could not estimate what the damage would be.
1004. What would the land be worth? It is ordinary ridge land, I suppose it is only worth about £3 an acre.
1005. Is the portion which would be required improved land? It is only ringbarked. There are pretty rough ridges along there, and deep gullies.
1006. *Chairman.*] The ridges would be no obstruction to a cattle track? No; it would make the land cheaper to resume.
1007. And if there was water on the back part of the land, the cutting off from the river frontage would not be of importance? No.
1008. Would the whole cost of opening that road be £1,000? Of course the Government would have to fence it.
1009. Would it cost £1,000 altogether? There would be 6 miles of fencing that would cost about £400.
1010. Will the purchase of the land and compensation cover another £600? Hardly, I should think.
1011. Then £1,000 would really be an outside price? I should think £1,000 would set him right.
1012. If the engineer says it will cost £1,000 more to make the bridge at Bowman's than at Gee's, the extra cost of the road would be more than saved by the diminished cost of the bridge? Yes.
1013. And the bridge will be available for Sir Thomas Mitchell's Road very conveniently? If you look on the plan, I think you will see there is a road from Sir Thomas Mitchell's Road to Gee's crossing.
1014. Would not the road continuing due north from Gee's crossing hit Sir Thomas Mitchell's track? I should think it would.
1015. Would that be a convenient part of the road on towards Liddell platform? It would not be much of a round for the Jerry's Plains people to get to Liddell to go across Gee's crossing. It would be a great deal better than not having a road at all, and they would have only to use it in flood-times.
1016. Which way do they go now to Liddell from Jerry's Plains? They keep below my property. I do not know where they go exactly.

John

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Mr. John Frith, drover, sworn, and examined:—

Mr. J. Frith. 10 Mar., 1890.

1017. *Chairman.*] Where do you reside? In Muswellbrook, at present.
1018. What is your occupation? I have been a drover all my lifetime.
1019. For how many years? Between thirteen and fourteen years.
1020. Have you frequently driven sheep or cattle? Both.
1021. At which place have you crossed the Hunter? At Bowman's.
1022. Do you know the present extent of the trade? Very little.
1023. Whilst you were conversant with the droving trade how many cattle crossed at Bowman's in a year? I have myself driven as many as 1,800 in twelve months.
1024. Would you think 20,000 an excessive estimate? Yes.
1025. You think there would be 20,000? I think there would be that, and more.
1026. How many sheep do you think crossed there in a year? I could not say.
1027. Where do the sheep mostly come from? From all stations on the Plains, and from the north-west and north.
1028. Do you think, since the railway has been opened across the Hawkesbury, and direct communication has been given to Sydney, sheep come here to cross? They would if they could cross the Hunter, but the Hunter has been in a very bad state.
1029. You think, ever since the Hawkesbury Bridge has been opened, the river has not been favourable? Very seldom.
1030. The stock-owners have an idea that if they send by road there is a chance that they may be stopped for weeks at the river, and for that reason they think it best to truck their stock? Some of the squatters have told me they would send more by road, but for the rivers.
1031. Do you think sheep suffer as much as cattle in the trucks? That depends on whether their fleece is on or off. If it is on, I think they suffer more.
1032. Do you think the gain of sending sheep by road is as great as the gain of sending cattle by road? I think it is.
1033. You think that for both kinds of stock the road is the best if there is feed? I am certain of it.
1034. If the road was good it would pay them to return to the road again? Yes; the butchers have told me at Homebush that they would allow almost 1 cwt. on every bruised beast.
1035. Do they allow anything for bruised mutton? I do not know, but I know that a lot of sheep going by road will not bring as much as a lot, equally as good, going by train.
1036. Do you think it would pay the owners of stock to pay a toll over the bridge? Yes.
1037. Would they pay 1d. per head on cattle? Yes; a drover would be willing to pay that himself.
1038. Do you think they would pay more? I am certain they would be satisfied to pay more.
1039. One penny per head on 20,000 head would only amount to £83 6s. 8d. in the year. That would not pay the toll-keeper's salary? No, I think they would not mind paying 2d. per head.
1040. Have you brought cattle down from Warrah? Yes, for twelve years.
1041. Long before you get within reach of Denman you know whether the river is passable? Yes, but you cannot stop to perish cattle on the road. You have to go on, to go round or to swim it.
1042. But if you knew the river was impassable at Bowman's, would you make for Singleton? You would have to go to Denman to do that.
1043. Cannot you go from Muswellbrook to Singleton. Do you mean to say that going from Warrah you would have to go altogether to Denman, and then north-east to Muswellbrook? Either that or travel along the metal road.
1044. The extra distance would not be so bad for stock as going on the metal? No.
1045. It is a great point to keep clear of the metal? Yes; I would rather go 15 miles on an ordinary road than 7 miles on metal.
1046. If you go from Muswellbrook to Singleton is it metal all the way? No, at odd places you can get off the metal a little, but not for long. I do not suppose you can get off more than 3 or 4 miles the whole distance.
1047. Is the metal as bad for sheep as for cattle? Hardly.
1048. How many miles a day do you travel cattle? That depends on the kind of country. If you are in lanes, or country where there is no feed, it is an advantage to go as far as possible, but the general average is about 9 miles.
1049. And for sheep? About 7 miles.
1050. Are there any feeding stations between Muswellbrook and Singleton? Not many. There are one or two little places.
1051. No reserves? There are one or two, but they are very small and badly situated. You cannot use them as you want to use them.
1052. Your evidence is that it is very inconvenient to be forced into the road from Muswellbrook to Singleton? Yes.
1053. And that this other route ought to be kept open in all weathers? I know of many men who would rather swim than go round.
1054. But you cannot swim your sheep? You can, but it is a great trouble to do so. I have known men stuck for four days at Bowman's trying to get 2,000 sheep over. They got them over, but the man had to swim and risk his life.
1055. Is there any accommodation at the crossing itself? No.
1056. Have you to go back? There is not a place where you can hobble your horse for a feed; there is no hotel or accommodation.
1057. Have you ever crossed the Goulburn near Denman? Yes.
1058. Is that a good stock crossing? Not as good as the others.
1059. Why not? Generally it is boggy and you have to go through Denman, and it knocks your stock about to get them through. The thistles are very bad on the road.
1060. Is the Goulburn often in flood? Yes; it has been impassable for some weeks.
1061. Is it at present as troublesome to get over there as Bowman's? Yes; it is worse, because there is bog and quicksand there.
1062. There is nothing to be gained by trying to make a road round there? No.
1063. You do not know any better stock route from the north than the one now used? No.

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Mr. J. Frith. 10 Mar., 1890.

1064. Do you know Gee's? Yes; I have been over it.
1065. Is it as good a place for stock as the other? I daresay it is, a little better if anything.
1066. If the engineers state that that is the best site for sheep, you, as a drover would have nothing to say against it? No; I myself would rather have it there.
1067. What is the highest toll you think it would pay a stock-owner to give for a bridge? I do not think any stock-owner would grumble at paying 3d.
1068. That is when he used it? Yes.
1069. But not if he did not use it? I don't think he would agree to it then.
1070. How often in the course of a year do you think he would want to use it? The A Company would want to use it a great many times if they sent their stock by road—I believe they have sent as many as 60,000 in twelve months.
1071. They have got regularly into the habit of using the railway? Yes; more on account of the river than anything else.
1072. You think if the bridge were put up, they would go back to the road? Yes.
1073. Even if there was a toll of 3d? Yes, they do not look at 3d. or 1s. on a lot of stock. They have told me to pay for whatever grass I wanted, and not to spare money in any way.
1074. Anything to get the stock to market in good condition? Yes.
1075. It pays better to get the stock to market in good condition than to save 1d. per head.
1076. What is the average depreciation of a beast travelling from Warrah to town, as compared with killing on the spot? That depends on the season. The better the season the less they lose.
1077. What is the greatest diminution you have known of? A great deal also depends on the drover. I suppose a lot of cattle, if they were not well driven from Warrah to Sydney, would lose 1½ cwt.
1078. That is the maximum loss you have known? Yes.
1079. What is the least? A lot of cattle should go down without losing ½ cwt.
1080. That is in a good season, if well driven? Yes.
1081. Do you lose anything by having to stay two days when the river is up at Bowman's? Yes; because you often have to stay when there is nothing to feed on.
1082. How much do they lose by that? By the time they get to the end of their journey, each beast would lose about ¼ cwt.
1083. Then you think they might lose 3s. or 4s. a head? Yes.
1084. Then you think it would be very little for a squatter to pay 3d. or 2d. per head to save 3s. or 4s. a head? I think no squatter would grumble to pay 3d. per head; if they did, the drovers would be glad to pay it.
1085. Do you think they would pay it on all stock crossing the river whether they used the bridge or not? I think they would be satisfied to pay for using the bridge.
1086. In dry seasons you would not use the bridge? No, we would rather not use it, on account of letting the cattle get a drink.
1087. Do you think your employers would willingly pay 3d. a head to know there was a bridge there if it were necessary to use it? Yes.
1088. Can you get your cattle over a bridge 15 feet wide? Yes, over 10 feet, if there are rails on each side.
1089. Fifteen feet would be ample for all requirements? I believe it would. It is not like a place where a lot of vehicles are travelling about. We could see each other and wait for each other.
1090. The river, in wet weather, is the principal obstruction between the north and Sydney? Yes.
1091. Is there any other place equally bad? There is the Colo River, but it runs down in a couple of days. At Bowman's it is different. If a lot of sheep get stuck at Bowman's, you have to take them back 8 or 9 miles before you can get anything to eat.
1092. If the Government were to build a bridge here, there would not be a clamour for one at the Colo River? No, there is a boat there, and it runs down very quickly. I have been within 20 miles of it with a lot of sheep when it has been half bank high, and when I got there it has been passable for a horse, and in two days more you could swim a sheep.
1093. You think the want of a bridge is a serious obstruction to the stock traffic of Sydney? Yes.
1094. Does a large quantity of sheep come down by this route? Not lately, because the rivers have been too high.
1095. How do they get to market? Most of them by train now, because they cannot get over the rivers.
1096. If there were a bridge the owners would sooner send by road where they can get plenty of feed? Yes, when the roads are good they benefit a lot.
1097. Can you tell us what number of sheep in any one year have gone down by road? No.
1098. Can you tell us the number that has gone from Warrah? I suppose about 60,000 have left there in twelve months.
1099. Would that be a fair average from that one place? I think an average of about 45,000 from there.
1100. When did you leave off droving? In July of 1889, I think.
1101. Were you often blocked at the river with your cattle? I have been blocked, not at the river, but further back, waiting for the river to go down. I always looked out to see that I did not get blocked. I have had to swim the river several times, and have had a lot of difficulty in getting across. I have had to pay men to come from Jerry's Plains to help me over. When I was living at Jerry's Plains I helped dozens of people across the river. I have never charged anything for helping sheep across the river, but others have done so.
1102. Would a punt be of any use across the river? It would be of use, but nothing like a bridge. When the river is up to any height at all you cannot work a punt.
1103. But it would be of no use for taking large quantities of stock over? It would take from daylight until dark to get 2,000 over, even supposing the punt would hold eighty sheep.
1104. You say that if a bridge were erected the traffic would be taken away from the train? Yes, a good deal would.
1105. From certain figures submitted to us, it appears that in 1888, 5,000 sheep, cattle, and horses went by train from Muswellbrook, and in 1889, 14,690 went. What is the reason of the large increase in the numbers sent by train in 1890, as against 1888? I think a great deal of it is due to the rivers being up. They could not get them across the river, and to have run them round to Singleton would have put them out of condition. I have known a man drown as many as twenty sheep when crossing Bowman's crossing.

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Mr. J. Frith. 10 Mar., 1890.

1106. What is the charge for a truck of sheep? I do not know.
1107. You think, then, that it is not by reason of the railway being available that the traffic by rail has increased, but because of the want of direct communication over the river at Bowman's crossing? That has a good deal to do with it. I know Mr. Cooper, of Jenagong, has trucked a large number of sheep on account of the river.
1108. Where was your place of residence when you were a drover? At Redbank, and Hall's Creek, half-way between Warkworth and Jerry's Plains.
1109. Do you think the erection of a bridge there would be of any advantage except as a means of conveying stock over the river? Yes, it would, because when the river is up the Doyle's Creek, people cannot get across from Muswellbrook at all. Then there are the people going from Denman to Jerry's Plains, and they cannot travel when the river is up.
1110. What would you say to a statement of this kind. "From inquiry and present observation of the tracks it is plain that there is little or no traffic from Muswellbrook," and that the traffic from Denman has altogether dwindled into insignificance? Well, the traffic has gone off a good deal lately.
1111. Why? Simply because they cannot get across the river. I have been wanting to go down to Jerry's Plains during the last two months with a dray, but I could not get there.
1112. And you, as a practical stock-drover, maintain that if this river was at all passable, the stock would again go to the road? A great deal of it would.
1113. In preference to the railway? Yes, a great deal of it.
1114. *Mr. Hurley.*] You say that on account of the river being swollen, you could not get across the river to Jerry's Plains? No.
1115. Could not you get round by Singleton? Yes, but look at the distance.
1116. What would the distance be? To go from my place direct to Jerry's Plains would be 31 miles. It would be 74 miles to go round the other way.
1117. You have been droving on the roads for thirteen years? Yes.
1118. How many times during those thirteen years have you been detained at Bowman's crossing? I never was detained at the river myself, but I have been kept back waiting for it to go down. I have often been detained at the station for a week on account of the river being up.
1119. Have you been kept back once a year during the thirteen years except on the station? Yes, more than that.
1120. Have you been detained twenty-six times? I cannot say, of course I drive more cattle than sheep, and if the river is a good height, I would rather swim than be delayed.
1121. It would not average twice a year? No, it would not.
1122. The road is exclusively used, is it not, for taking cattle to market? Yes.
1123. You have never seen any waggons or drays on it? Yes, plenty.
1124. What doing? Travelling up and down.
1125. Carrying general merchandise, store goods, or station supplies? I cannot say they were store goods, but I have seen dealers and people travelling from Jerry's Plains, and so on.
1126. There is not a great deal of traffic? There is a good deal.
1127. Could you count ten vehicles a week upon it? No.
1128. Could you count five vehicles a week upon it? Yes, on an average you could. Then there is a good deal of traffic from Jerry's Plains to Muswellbrook.
1129. Did you ever see anything other than drovers and cattle beyond Jerry's Plains to Colo Valley? Yes.
1130. What? Teams.
1131. What did they do? The people who live along there have to come over for their provisions, and the produce they grow there has to be brought away to be sold.
1132. They are small farmers? Yes.
1133. Would they use the bridge at Bowman's? No.
1134. There would be no necessity for the bridge for them? No.
1135. Therefore the bridge, apart from the cattle it would accommodate, would be of use to about five persons in the district? Yes, but that does not include teams or horsemen.
1136. You know the depreciation in the value of beef taken by rail to Sydney, and conveyed by road? I consider the rail knocks 1 cwt. off every beast trucked.
1137. Therefore the meat driven to market is better for the consumer and purchaser than that taken by rail? Yes.
1138. Have you read, heard, or thought of the question of taking meat to market in a chilled condition? I have heard of it.
1139. Have you heard that it is likely to be successful, and that it will give facilities to the pastoralist to get his meat to market in a better condition than if it is taken by rail or driven? I believe it would be better.
1140. If it is taken down at 8s. or 10s. per head, do you not think it will be more to the advantage of the pastoralist? It might for the big squatters, but not for the smaller ones.
1141. Do you not think it would be better in the interests of the consumer, and that the beef would be more healthy? I do not think it will make any difference if the stock are driven.
1142. If cattle are driven in wet weather, and put into rivers, do not some of them die? An experienced drover, who understands anything about his business, would not put the cattle into the rivers when they were warm. He would wait until they were cold.
1143. It would be injurious on the part of the drover to do such a thing? Yes.
1144. Supposing there was a chilled meat industry here, and another up the line, and others at several places where cattle could be brought, and supposing they were put into trucks and carted direct to Sydney, would it not be better for the consumer and the seller? If it did not cost them too much to get them chilled and carried down, no doubt it would be better for the butchers.
1145. Supposing that they took them down at 8s. a head from here. You charge 5s.? Yes, but I drive them nearly 100 miles further than here.
1146. But supposing that were done, there would be no necessity for a bridge? Yes, there would, for the Jerry's Plains, and other people, would travel backward and forward.
1147. You think it is necessary for the general public? Yes.

1148.

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Mr. J. Frith. 10 Mar., 1890.

1148. You stated just now that twenty sheep were lost crossing Bowman's. Do you mean by that Bowman's crossing on the Hunter River? Yes.
1149. Have not the Government a man stationed there? Only in flood-time. I have known that number of sheep to be drowned there when the river was only up to the saddle-flaps.
1150. What is the man doing when he is not engaged at the crossing? Maintaining the road.
1151. Would he have to be in the district if he had not to attend to the crossing? He would have to be kept on the road. When he is at the river for weeks the road is neglected.
1152. The watching of the crossing is an intermittant source of expenditure to the Government? Yes.
1153. If a bridge were constructed the man's pay for attending the bridge would be saved? Yes.
1154. Do you know the Jerry's Plains district well? Yes.
1155. How many people are residing on the south side of the river—say within 10 miles of Gee's crossing? I could not say.
1156. Are there a number of farmers there? Yes, a good many.
1157. Where do they go for stores? They often get them at Jerry's Plains and Singleton, but they have to go a long way round to get to Singleton.
1158. Then the people who live on the south side of the river would be greatly accommodated if a bridge were constructed to give them access to the railway station at Liddell? Yes; it would be a lot nearer for them and more convenient.
1159. You have stated that trucked cattle would sometimes lose 1 cwt.? Yes; they allow that. Sometimes a whole bullock is lost.
1160. I suppose it would depend on the state of the market what the amount of loss would be? Yes.
1161. Sometimes it might be 12s., and at others, 25s.? Yes.
1162. Have you noticed that since the opening of the Hawkesbury Bridge there has been a large increase of cattle sent down by rail? Yes.
1163. I understand you to prefer the crossing at Gee's to Bowman's? I believe it would be better for the Jerry's Plains people, but no better for travelling stock. It would be more handy and more direct for the Jerry's Plains people to go to Liddell or Ravensworth.
1164. Do you think the travelling stock is likely to cross at Gee's if the bridge is constructed there? Yes, they would go there.
1165. Would they go there if the river was down? If there was a man to collect the toll, he would catch them one way as well as the other.

Mr. William Hobden, grazier and farmer, sworn, and examined:—

Mr. W. Hobden. 10 Mar., 1890.

1166. *Chairman.*] Where do you reside? Between Jerry's Plains and Singleton.
1167. What is your occupation? Grazing and farming.
1168. As you live on the south side of the river, is this bridge of any great importance to you? I have an interest on both sides. On the south side particularly, because I have a great lot of fruit which requires to be taken to market.
1169. What kind of fruit? All kinds.
1170. Do you send it to Singleton? Yes, to Singleton, Sydney, and out as far as Armidale.
1171. When you send it northward what station do you deliver at? We have to deliver at Singleton.
1172. But in dry weather you can get across Gee's crossing? No.
1173. Not with a cart? Not with any safety. It would be far better to go round than run the risk.
1174. Are you likely to get stuck in the bed of the river? Yes, and the bank is not safe.
1175. How many miles is it from your place to Liddell platform? About 15.
1176. And what is it to Singleton? 16 miles.
1177. Then you only save a mile by going to Liddell? Yes.
1178. And then you save the extra trainage? Yes.
1179. Is there any considerable demand on the part of the Jerry's Plains people for a bridge to enable them to go north? Yes, I think so. I think if they could get to the Liddell platform, or station, they would do most of their business there.
1180. In any case a storekeeper at Jerry's Plains would lay in his stocks from Singleton? Yes; at the present time.
1181. But even if there was a bridge? I could not say.
1182. How many people are living at or near Jerry's Plains? There are between thirty and forty houses. There may be more.
1183. Are you on the main road from Bowman's crossing through Jerry's Plains? Yes.
1184. Do you see all the stock which comes down? I live within 2 miles of the road, and the road goes through our land. I see a great deal of the stock coming down.
1185. Do you think on an average there are 20,000 cattle a year coming down? I think there are.
1186. How many sheep? Not so many as there have been.
1187. What do you attribute that to? I don't know. Some people say one thing, and some another.
1188. Then, in wet weather, you can always get to Singleton by Warkworth? Yes, by going 23 miles.
1189. Would a bridge at Maison Dieu be a great help to you? Yes.
1190. But only in wet weather? Yes; it is a bad crossing.
1191. You can get your fruit carted across there in dry weather? Yes.
1192. Is there any worse crossing there than at Gee's? It is better.
1193. Gee's is a bad crossing even in dry weather? Yes, at any time.
1194. If a bridge is to be built at all, which site would suit Jerry's Plains best—Gee's or Bowman's? I think Gee's would be the best.
1195. Do you really think there is any need for a bridge at all? I think so.
1196. Altogether apart from the fondness of people generally for getting money spent in their district? Yes; I think so. People will not go 20 miles round if they can get to a railway by going 9 miles.
1197. Is there any road laid out at present from Jerry's Plains to Liddell or Ravensworth? Yes; part of the way.
1198. And you have to trespass on people's property? Yes.
1199. Is there any trouble about it? Well, neighbours are very agreeable.
1200. If you do not do damage, they do not grumble? No.

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Mr. W. Hobden. 10 Mar., 1890.

1201. If a bridge were made here there would be a demand for a straight road through? No doubt.
1202. Would it go through Liddell or Ravensworth? Liddell.
1203. How much new road would have to be made? About 2 miles at the most.
1204. Is it a fairly good road? It is only a bush road.
1205. Is it boggy in many parts? Yes; at the present time.
1206. Even in wet weather that would scarcely be a practical track for vehicles? It would be very bad.
1207. It would do for horsemen? Yes.
1208. When the weather is wet, does not everybody stop at home and put off their journeys as much as possible? They do if they have to go a long distance round, and they often lose a great deal by that.
1209. People only turn out if it is a case of necessity? That is all.
1210. So that, practically, until the river is down, people stay at home? Yes.
1211. But when you are taking stock to market, you go along in very bad weather? Yes.
1212. It does not make any difference to you? No.
1213. *Mr. Trickett.*] For obtaining access to Singleton is not the road by Maison Dieu better than any other? Yes, it is 5 or 6 miles shorter.
1214. The distance is only about 12 miles is it not? Yes; from Jerry's Plains to Singleton by Maison Dieu.
1215. What is the distance from Jerry's Plains to Liddell? Nine miles or a little more.
1216. How often do you go or send in to Singleton? Nearly every day in the fruit season, or about twice a week on an average.
1217. Are there many other people there who grow fruit and produce? There are small farmers with orchards.
1218. Where does their produce generally go to? Singleton.
1219. Is the district likely to increase as an agricultural district? I think so—I do not see what is to prevent it. It possesses as good cultivation land as any on the Hunter.
1220. Have you had any experience of river bridges? Not much.
1221. Was the bridge which was built at Bowman's crossing a good one, or a bad one? It was badly constructed. Low-level bridges will not do here.
1222. You do not think it is advisable to build low-level bridges? It is not advisable.
1223. The river is very rapid? Yes; and there is so much drifting timber about.
1224. Do you think a high-level bridge, about 15 feet wide, would be sufficient to answer requirements? I think so.
1225. *Mr. O'Sullivan.*] Upon which side of the river is the polling-place for Jerry Plains? On the south.
1226. How many votes are recorded at an election? Over eighty, I think.
1227. Are there not some German farmers down there? There are all kinds, I think.
1228. But is there not a German settlement? Not that I know of.
1229. Who carries on the fruit business besides yourself? It is carried on by all classes.
1230. Has vine cultivation been started? Yes; by the Germans. They started it, and they give instructions to others as to how to carry it on.
1231. Then we can regard Jerry's Plains as a permanent and growing settlement? I think so.
1232. Is there much room there for agricultural settlement? Yes.
1233. Is there more land to be taken up? There is more to be cultivated. There is not much Government land available there now; only on the town common.
1234. You have a very large town common? Yes; about 3,000 acres.
1235. A temporory common? Yes; and permanent, too.
1236. Have you petitioned to have it thrown open to selectors? I am not interested in it at all.

Mr. Richard T. Keys, grazier, sworn, and examined:—

Mr. R. T. Keys. 10 Mar., 1890.

1237. *Chairman.*] Where do you reside? At Bengalla. I am the owner of the Bengalla estate.
1238. How far from this township? About 5 miles.
1239. What is your occupation? A grazier.
1240. Do you send your own stock to market at your own risk? Very frequently, if it is not sold privately to Mr. Richards.
1241. Have you any interest in the proposed bridge? None, beyond the fact that it will be a great convenience to me in sending stock to Sydney and Maitland markets.
1242. How long have you been sending stock to market? About thirty years.
1243. How often have you been inconvenienced, and stuck up by floods? I have never made a proper calculation, but it has been very frequently. It must have occurred about a couple of times a year. Last week I sent a drove of 100 cows to Maitland, and they were stuck up at this very spot, and had to be brought along the metalled road to Singleton.
1244. Do you not know before they leave your place, whether the river is fordable or not? No. It was the Goulburn River. The Goulburn is more subject to floods than the other.
1245. Then you may sometimes be deceived when you start your stock from your place? Yes.
1246. Do you think it would be worth the while of the stock-owners of this district to pay a toll on the bridge? Yes, it would. I would willingly pay 3d. a head.
1247. Would that be only when the bridge was used, or for all that crossed the river? The stock would always cross the bridge if it was there.
1248. The evidence is that they would not. They would prefer to go through the water for the sake of a drink, and to avoid being knocked about on the bridge? Probably they would. I, of course, speak more from the grazier's point of view, but I do not suppose I could add anything to what Mr. Frith has stated.
1249. You only know it would be a great convenience to you? Yes.
1250. You would always like to know when the road is open? Yes.
1251. It would be worth something to you? Yes; we frequently send stock to catch a certain market, and they are stuck up at the bridge.
1252. Would it be £10 a year in your pocket to have a bridge there? Yes; no doubt it would.
1253. Would it be £50 a year in your pocket? I do not know that it would. No one is more concerned in the matter then Mr. Richards. He takes three-fourths of the stock from this district. I should say he takes about 10,000 stock a year.

1254.

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Mr. E. T. Keys. 10 Mar., 1890.

1254. And if there was a toll he would pay the most? Yes.
1255. And he would be the best witness as to what it would be worth his while to pay? He would. I know he is constantly hindered by the crossing.
1256. Speaking as a citizen, apart from your personal interest in the matter, do you think it would be a fair national work to put up a bridge? Decidedly. It would be a benefit to the whole of the population from here to Moree.
1257. And enough people would be benefited by it to justify the expenditure? I do not think there is any place on the waters of the Hunter where a bridge is more required.
1258. And one bridge between Denman and Singleton would be sufficient? I think so.
1259. You do not think there would be any need of a second at Maison Dieu? I do not think so. When they once cross Bowman's the road is free to Maitland and Sydney.
1260. And it would only be the people who want to go from Jerry's Plains to Singleton who would be greatly benefited by a bridge at Maison Dieu? Yes.
1261. That is a much smaller population than those who are interested in getting to Sydney straight? Yes; living at Muswellbrook. I am not acquainted with the exact position of Maison Dieu and Gee's.
1262. You have no notion as to what are the relative merits of Bowman's or Gee's crossing? I certainly think Gee's site would be the best to the greatest number, because it would benefit the people of Jerry's Plains; they would get from Jerry's Plains to the railway, and the stock could use that crossing equally as well as the other; the position would suit both residents and graziers.

Mr. John Mason, drover, sworn, and examined:—

Mr. J. Mason. 10 Mar., 1890.

1263. *Chairman.*] Where do you reside? Denman.
1264. What is your occupation? Drover.
1265. If you live at Denman you know the Goulburn River, where it joins the Hunter? Yes.
1266. Have you ever crossed that river with stock? I have.
1267. Would it make a good crossing-place for stock in bad weather? No; it is bad.
1268. Why is it bad? It is boggy.
1269. It would not save the making of a bridge at Bowman's crossing to open a stock route that way? I think it would cost as much to make a bridge there as at Bowman's.
1270. Is the Goulburn a difficult river to cross? Very bad.
1271. As bad as the other? Worse. There is more timber in flood time.
1272. And you do not recommend it as a crossing-place for stock? No.
1273. You think the present stock route is as good a one as we can have? It is.
1274. You think it would be a pity to divert stock from the present road? Yes; you would have to purchase property to do so.
1275. All that is wanted is to make the present route available in all weathers? Yes.
1276. Do you think the quantity of stock coming down is sufficient to justify the building of a bridge? Yes; 6,000 stock go over from within 10 miles of my neighbourhood yearly, and more.
1277. Do you think a bridge 15 feet wide would be sufficient? Yes.
1278. You only want a bridge above flood-water? Yes; the bridge we had before was only an artificial bridge. I was the second to take cattle across it, and it shook the moment I went on it.
1279. Then it was not a bridge built to live? No.
1280. Do you think a fairly well-built bridge would stand the timber drift which comes down? Yes; it is a bad crossing at Bowman's at any time. It is a very wide crossing. It is a good crossing in one way for cattle when the water is low, but when it is high it is very bad; and when it is low—at summer level—it is bad for sheep.
1281. Is Gee's a good crossing? Yes, in one sense; but Bowman's crossing is the worst I have ever crossed.
1282. You would rather cross Gee's than Bowman's? Yes.
1283. If a bridge were made at Gee's, would it serve stock as well as at Bowman's? Yes; but Bowman's is more direct.
1284. If it is a bad season you get stuck up at many other places besides the Hunter? I think you can travel from here right out to the Warrego, and there are bridges everywhere.
1285. Then this bridge is the worst between Warrego and Sydney? Yes, I am certain it is. More stock have been delayed and turned back there than anywhere else.
1286. Of course in dry weather you are never stuck up? No, unless there is a fresh. I have known sheep to be stuck up there.
1287. Even in a bad season? Yes, it must be 80 yards across there at any time.
1288. Then if it is 2 feet deep you are stuck up? Yes, with sheep. On the banks of the Goulburn River there is quicksand, and it is very bad.
1289. There is no road open that way at present? No, you would have to go through Mr. White's property, and through Mr. Ellis' property. You have a good reserve on the other road, and it is only 2½ miles from Denman to the reserve.
1290. If the country were unfenced and unpurchased as in the early days you would not in a bad season try to take your stock across from Denman over the Goulburn? Well, it would be a good road, but you would not have the same feeding ground as on the other road, and it would be a great deal further round.
1291. The banks would be boggy? Yes; and I believe there would be a great difficulty in putting a bridge there.
1292. You could not dodge the river altogether by getting round to the west of Denman? I often have got permission when the Hunter has been up, and the Goulburn down, to go round that way with sheep.
1293. Then sometimes one river is up and the other not? Yes, but the Goulburn is very bad in flood.
1294. If the Goulburn is up, it is practically as impassable as the Hunter? Yes.
1295. *Mr. Trickett.*] Would you prefer Gee's crossing to Bowman's? I would prefer Bowman's crossing.
1296. You think it is the better crossing? Yes, it is the shortest and best road.
1297. You would not have to go through much private land to go across Gee's crossing? Yes, you would have to go through purchased property. Years and years ago we used to go that way with stock, and I did not prefer it at all. Three years ago I got 300 or more signatures in favour of Bowman's crossing—from every stock-owner and drover in the district.
1298. They were all in favour of Bowman's crossing? Yes.

1299.

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Mr. J. Mason. 10 Mar., 1890.

1299. Have you heard what is the feeling lately? I hear that some of the Jerry's Plains people want it at Gee's crossing, but I think the other crossing is the better one.
1300. Because it is on the main road, and follows the stock route? Yes; a large quantity of stock passes through Denman. This last week, seven lots of fat cattle passed through. I have left a lot to come to this meeting, and I will cross them at Bowman's to-morrow.
1301. *Mr. Hurley.*] Can you give an idea of the number of stock which pass over Bowman's? I suppose there must be some thousands yearly.
1302. Over 20,000? Yes.
1303. Have you suffered any inconvenience between the Hunter, Bowman's crossing, and your market? The Colo River is a bad place, and it wants a bridge, but you can get over it better than you can over Bowman's.
1304. Have you ever been detained there at all? Yes; I was detained there the other day.
1305. You have been twenty-eight years on this route? Yes.
1306. How many times have you been stopped through the river being flooded at Bowman's? I was detained there with a lot of Mr. Douglas' cattle for five days, and had to bring them on the Ogilvie's reserve. They were store cattle going to Goulburn. They were very weak at the time, and if I travelled them down the main road I might have lost half of them. I have been detained with Tyson's cattle on another occasion. I had 200 bullocks, for Martindale, going to Sydney, and we drowned five bullocks at £9 a head at Bowman's. We had to bring the rest back and put them in the paddock. I have been detained seven or eight days.
1307. In how many years? Seven or eight years.
1308. Have you been detained once a year during the time you have been droving? I would not say that.
1309. There were years when you were not detained at all? Yes, when we know the river is up, the drover engages men, and it costs him a good deal to get the stock over.
1310. So that on an average you have not been detained once a year in twenty-eight years? I would not say that, but I have helped stock over which have been detained, many times.
1311. At any rate some years you are not detained at all? Yes, some years we have had nothing to detain us, but when we get a season like this we are detained very often.
1312. Have you heard anything about chilling meat and taking it by rail to Sydney? Yes.
1313. Do you think that will interfere with your vocation? No.
1314. Why? Because they charge too high for everything on the railway. People send stock to market to make a little profit out of them.
1315. What do you receive per head for taking stock to market? Generally 6d. a head for sheep from Liverpool Plains, and 3s. a head from this district for cattle.
1316. Do you think if the Railway Department made low charges on meat taken to market in a chilled condition, there would be any necessity for a bridge, or that there would be any droving on the road at all? You would do a lot of poor men out of work. I have driven stock for agents in Sydney for many years, and I know they like to get them to market as cheaply as possible.
1317. It would interfere with your trade? Yes.
1318. Since the railway has been opened across the Hawkesbury, have not a large number of the stock been sent by rail? Not from here.
1319. Leaving outside the question of the stock traffic which would be served by a bridge, is there any other public convenience which would be served? Yes. There are the squatters about Jerry's Plains, and the cattle buyers who come in and by cattle. When the river is up they cannot take them over without going down to Singleton.
1320. But the population of Jerry's Plains is not sufficient to warrant the construction of a bridge for the purposes of the cattle they purchase? There are a good many people around Jerry's Plains and Denman, who would not come to Muswellbrook if they could get a bridge erected to take them to Jerry's Plains.
1321. Did you ever lose any bullocks? Yes, I drowned five on one occasion, and they cost £9 a head.
1322. *Mr. O'Sullivan.*] Why do you prefer the bridge at Bowman's crossing, because you tell us it is the worst crossing between the Warrego and Sydney, and then you say you prefer it to the one at Gee's? I do prefer Bowman's crossing, if a bridge is erected.
1323. Which one do you prefer? Bowman's crossing.
1324. Why do you prefer the bridge at Bowman's crossing? Because it is only about 7 miles from the reserve, and if you take them off the reserve, and have to drive them 3 miles further, they do not look as well.
1325. But all this time you say this is the most dangerous crossing between the Warrego and Sydney? It is.
1326. Then why do you want the bridge to be put over this most dangerous crossing instead of it being at a less dangerous place lower down? It is a very wide crossing, and that makes it dangerous. You can get sheep over a narrow crossing. I have been there for days with 6,000 sheep, trying night and day to get them over.
1327. But why do you prefer the bridge to be at Bowman's, instead of at Gee's crossing? Because it is on the straight route.
1328. Then you prefer it because it is the ordinary stock route? It is, and it is the oldest route in this part of the colony.
1329. That is your chief reason for wishing the bridge to be there. You want to follow the old route? Yes, by going the other way you would have to cross the ridgy country as well as private property, and you would have more lanes.
1330. Then you prefer the present stock route because you are nearer the reserves, and would have more room to drive your cattle on the route? Yes, it is a good road to Jerry's Plains crossing and to Bowman's crossing, and when the bridge is erected there it is good travelling. We were detained there, and I think it is the proper place for a bridge.

Mr. Thomas Cook, grazier, sworn, and examined:—

Mr. T. Cook. 10 Mar., 1890.

1331. Where do you reside? At Turanville, near Scone.
1332. What is your occupation? A grazier.
1333. Are you well acquainted with the stock travelling from your place to Sydney? Yes, with my own stock traffic.

1334.

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Mr. T. Cook. 10 Mar., 1890.

1334. Do you send your own stock across at Bowman's? Yes, when I send any down. A few years ago I used to send 3,000 a year.
1335. Do you give a preference to the railway since it has been opened? Yes; for small lots.
1336. What do you call small lots? Thirty or forty. They go in very much better. I pay 2s. per head droving 200 head to Homebush—over 10s. per head by rail.
1337. On the whole, you make more per beast if they go by road? Yes; the butchers prefer them.
1338. What difference does it make to your pocket if you get them down by road? I could not say, but the butchers have a preference for road cattle. Stock are considerably bruised in trucking.
1339. Butchers are apt to express their preference in money? I suppose so.
1340. How much more do you reckon you would gain? It would be difficult for me to say.
1341. Do you think the opening of the railway has superseded the necessity of a bridge over the river? I should think the bridge is necessary for every kind of traffic. There is no way of getting over. My cattle, years ago, were stuck at the bridge nearly a week in flood-time.
1342. Do you find that cattle owners and drovers complain very much? Yes.
1343. You look upon the road as one of the great high roads to Sydney? Yes.
1344. Looking at the extent of the traffic, do you think the expenditure of £10,000 on a bridge would be reasonable? I do, it would be an expenditure for all time.
1345. As a cattle-owner, and a resident in the district, do you think a bridge with a roadway, 15 ft. wide, would be sufficient for all purposes? That is rather narrow.
1346. It is wider than the bridge at Singleton by the side of the railway? It would possibly do, if the cattle were taken over carefully.
1347. Practical drovers say it would suit them? If it would suit them it would suit me, so long as cattle could go over it.
1348. The project, as originally put before the Standing Committee, was for a bridge to cost over £20,000. If a bridge, 15 feet wide, could be built for £10,000, do you not think that would satisfy the legitimate wants of the district? Quite so.
1349. There is no need to waste £10,000 extra on a grand structure? No.
1350. If it is above flood-level, a buggy at a time can go across, and that is all that is wanted? That is all. Cattle can be taken over in little lots at a time. They need not be crowded unless they liked.
1351. You are further away from this place than most of the local witnesses. I suppose the bridge would not be of so much importance to you as to many living nearer? It is of importance to me in regard to the stock traffic generally.
1352. Do your stock come down there now? Yes, occasionally.
1353. How often have your stock been stuck up there? The drovers could tell you better, I had four going continually a few years ago.
1354. You do not go into details as to how they are stuck up? I suppose they have been stuck up hundreds of times. Of course, it is a matter of thirty or forty years droving. They have often been stuck there a week, and sheep have been kept a fortnight or three weeks.
1355. *Mr. Trickett.*] Have you a special knowledge of the locality? Yes.
1356. Which do you think would be the best site for the bridge—Bowman's or Gee's? I do not know Gee's crossing; others can speak of it, the most suitable place would be the best one for everybody.
1357. *Mr. Hurley.*] You prefer to send your stock to market by the route spoken of, on account of it commanding a more ready market? It cost me less money. It costs me over 10s. a head to take cattle to Sydney, and I can get them driven in for about 2s. to 3s., according to number.
1358. At all events, the buyers prefer driven stock to those sent in by rail? Butchers prefer driven stock to train stock which get fearfully bruised, if taken only a short distance.
1359. What is the cost per head for taking stock to market by the Colo Valley? 2s. to 3s.
1360. I suppose you have heard that the Railway Commissioners have been thinking of constructing chilled meat cars for the conveyance of meat to market? Yes.
1361. Have you given the matter any consideration? I have thought about it.
1362. You know that in other parts of the world—America for instance—the system is practised to a large extent. Do you think that if chilled cars are built, and the freights are lower than the present freights, the pastoralists and graziers are likely to send their meat to market in that way? It will all depend on the question of carriage.
1363. You recognise the fact that you would reach the market more speedily than otherwise? The idea would be very good if it were carried out.
1364. It would be better for the consumer as well as for the producer? Yes.
1365. If the freight charges were sufficiently reduced you would always prefer to send your meat by train? Yes, if it were convenient to do so.
1366. *Mr. Trickett.*] But even if that means of carriage were provided, the stock would have to be driven to some centre for slaughter? Yes.
1367. That would not do away with the necessity for a bridge? Apart from the chilled meat question, the bridge is required for the general traffic of the public.
1368. *Mr. Hurley.*] Outside the question of droving you think the bridge is a national necessity? I think so.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Bridge Over the Hunter River at Jerry's Plains.

APPENDIX.

A.

Precis of Papers in Relation to the Proposed Bridge at Jerry's Plains.

Bridges erected for the accommodation of the traffic at Denman and Bowman's Crossing were carried away by a heavy flood in the year 1879.

The bridge at Denman was replaced, and steps were also taken in the direction of rebuilding the other bridge, either at the old or at a better site.

17/3/81.—Mr. Laurenson, Road Superintendent, reported on a proposal to place the bridge at Krust's lane, stating that a high-level bridge, with road and fencing, would cost £5,600; and that compensation for land required would cost £2,000 or £3,000 more.

4/4/81.—Mr. John Brown, M.P., wrote to the Minister in advocacy of the same site, intimating that it would be a great convenience to the residents if the bridge were re-erected as near the Jerry's Plains township as possible. At present the people had to go to the station at Singleton, 20 to 26 miles away, whereas if the bridge were put up on the site suggested they could get to Liddell Station (9 miles).

Mr. Wells reported that the site recommended by Mr. Brown had, as he had supposed, much in its favour; but its chief advantage—ready access to the railway—would not justify the payment of the heavy compensation mentioned by Mr. Laurenson.

22/4/81.—Mr. Bennett minuted that, with a view to avoid the heavy compensation referred to, it had been decided to rebuild the bridge on the old site.

So far as the papers show, the matter then slept until June, 1883, when Mr. A. J. Gould wrote to the Commissioner for Roads, asking what steps had been taken with reference to the erection of the bridge across the Hunter River, at Jerry's Plains.

Mr. Bennett replied that Mr. Wells had been instructed to visit the locality and make a final report, and when that was received definite action would be taken.

Mr. Gould thereupon forwarded a petition from residents of Jerry's Plains, Warkworth, Singleton, Ravensworth, Camberwell, &c., setting forth that a road had been opened from Liddell Station, for several miles, in the direction of Jerry's Plains; that the Minister had favourably received a petition for an extension of such road, to join the main road from Denman somewhere near Gee's wine-shop; that to render this road of use to the public, a bridge across the Hunter at or near Gee's was required; that a sum of £6,000 was placed on the Estimates for a bridge at Bowman's Crossing; but that the site at Gee's was in every way better, as it would admit of a high-level bridge which would avoid the flat which was almost impassable in bad weather; the expense of a second bridge also would be saved. They therefore prayed that steps might be taken towards the erection of a bridge at Gee's,

Mr. Wells reported that some years before he reported in favour of this site, but the heavy compensation demanded for the land was too extravagant to be entertained. Time, however, might have changed the views of the persons concerned, and the local officer might make inquiry on this point.

Mr. Earngey, the local officer, reported strongly in favour of the site at Gee's, and intimated that he had arranged to go over the ground with Messrs. Pearce and Parnell, the land-owners concerned, and would report further.

16/10/83.—Mr. Gould, M.P., forwarded a memorial from residents of Jerry's Plains, in favour of the erection of the bridge at the old site (Bowman's Crossing), because—(1) It was well known; (2) it was the direct route; and (3) at that site only the direct expense of a bridge would be required. They also protested against the Gee's and Krust's lane sites, because the road leading thereto would be a most expensive one, passing over numerous creeks and gullies, and through private properties, to which latter, moreover, it would do much injury in cutting them off from access to the water.

10/12/83.—Mr. Earngey submitted his promised report. He had, he said, been over the various roads with Mr. Pearce, and had proved to him the indisputable advantages of the site at Gee's; but he still stoutly objected to any resumption of a road through his property, maintaining that no money would compensate him for the severance of his land and cutting him off from the water.

14/12/83.—Mr. Wells, in view of the manifest advantages of the site at Gee's, recommended that inquiry should be made at the Surveyor-General's office whether, under the terms of the grants, a road could not be forced through.

18/12/83.—Mr. Wells minuted further that he had ascertained that the terms of the grants admitted of roads being made through the land, with interdict presumably of passage within 200 yards of main homestead, and that Mr. Earngey should ascertain whether severance close to the river was absolutely necessary, and if the road could be kept 200 yards away from the homestead.

Mr. Earngey replied that it was absolutely necessary for the road to follow a leading range through Mr. Pearce's land, which would therefore of course be subdivided, and that the road could be kept 200 yards away from the homestead.

Mr. Wells suggested that the papers should be sent to the Surveyor-General for his opinion. Mr. Bennett minuted for the plans of the bridge to be put in hand; but what further action (if any) was then taken the papers do not show, and nothing more is recorded until November, 1884, when Mr. Narden reported that he had examined the various sites proposed for this bridge, and that at Gee's was better than Krust's, but the site near Rock's was better still. If the latter were adopted the properties of Mr. James Bowman and Mrs. John Bowman would be interfered with instead of those of Messrs. Pearce and Parnell. The expenditure required on the road was hardly justifiable in view of the smallness of the interests involved, and it was to be borne in mind that if a railway were made from Muswellbrook to Cassilis a good deal of the sheep traffic, upon which so much stress had been laid, would be diverted from this route.

19/1/85.—Mr. Gould drew the attention of the Minister to the necessity for a bridge at Maison Dieu or Dight's Crossing; also asked when a bridge would be erected across the Hunter at Jerry's Plains.

25/9/85.—Colonel Wells reported that Maison Dieu was the best site in respect of shortness of span, but for suitability for traffic lines Dight's Crossing might be preferable. Probably an intermediate site might be better than either, but the erection of a bridge at Jerry's Plains had a bearing on this question, and a proper judgment could not be formed until the river had been examined from Dight's Crossing to Bowman's Crossing.

November, 1889, to April, 1887.—Several letters of reminder in regard to proposed bridge at Jerry's Plains were received from Mr. Gould, M.P.

20/10/87.—The same gentlemen submitted a petition, praying for the erection of this bridge, and pointing out that although so many years had elapsed since the destruction of the two bridges, only the one at Denman had been replaced.

9/1/88.—The annual report of Mr. W. S. Wells spoke in favour of the Bowman's Crossing site, as much less expensive than the others and equally serviceable.

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In the Draft Estimates for the year 1890 the sum of £20,000 was entered for this bridge*, and the Minister minuted as follows:—"Jerry's Plains bridge, to replace low-level bridge at Bowman's Crossing washed away by a flood, and to give access from the west side of the Hunter to the railway at Liddell."

1/10/89.—The Minister moved in the House,—"That the bridge in question be referred to the Public Works Committee for consideration and report." The motion was carried.

10/2/90.—Mr. Hickson minuted, referring to four bridges which it had been proposed to refer to the Public Works Committee, that Jerry's Plains and * * * bridges should be withdrawn, as they could be erected for an amount under £20,000, and in any case further investigation was necessary as to whether any expenditure at these places was justifiable.

11/2/90.—The Minister minuted to withdraw the proposals for all the iron bridges except Cowra from the Public Works Committee, and to explain the change of proposal.

C.A.B., 14/2/90.

B.

Report by Colonel Frederick Wells, Engineer for Roads.

Bridge over the Hunter at Jerry's Plains.

The demand for a bridge over the Hunter at or near the locality of Jerry's Plains arose in 1876, when, contrary to the opinion of the late Commissioner and Engineer for Roads, it was decided, at the urgent instance of the Member for the district, to build two low-level bridges, one at Denman and the other at Bowman's Crossing, to meet the requirements of the then existing large stock traffic which came from the north and north-western country through Jerry's Plains to cross the bridge at Warkworth over the Cockfighter Creek, and travel by the Wollombi-Wiseman's Ferry Road or the Bulga Road, *via* Richmond Bridge, to the Sydney market. These two low-level bridges have both been swept away, as was anticipated—that at Bowman's Crossing in 1879, that at Denman standing two years longer.

No low-level bridge will, under ordinary conditions, stand in the bed of the Hunter River, which is quite unsuitable to afford holding under the extreme pressure of the heavy rafts of timber that come down in flood, the first one erected from my design at Luskintyre being the only one that has stood of all those seven in number that have been built. This is due to its very low-level, and the fact of its piles being driven through a solid stone weir that had been a crossing for many years. The plea put forward for the Denman and Bowman's Crossing bridges was for stock accommodation principally, and on the proposal for re-erection another element was introduced, viz., if possible also to serve the interests of Jerry's Plains town and settlement, by securing the residents short access to the railway at flood seasons. With this view, after inspection of many sites, that at Gee's Crossing was selected as most suitable for the stock traffic from Muswellbrook and Denman, as also for the access from Jerry's Plains to the railway at Liddell, causing no material difference in stock route from Muswellbrook and that from Denman. The selection of this site (Gee's) was long debated, and much impeded from the first inception by the opposition of land-owners, which has since been molified.

The site at Bowman's Crossing would only have served the stock routes and was a most unsuitable one for a bridge of any kind on the ground of construction. It was then finally proposed to build a high-level iron bridge at Gee's, for which purpose a vote of £20,000 has been taken; but circumstances connected with the principal factor, viz., the travelling stock, have changed so much that, after my late inspection, I do not think the large outlay above quoted is warranted. From inquiry and personal observation of the tracks, it is evident there is little or no traffic from Muswellbrook by Sir Thomas Mitchell's line, and the traffic from Denman has also dwindled into comparative insignificance. Since the opening of the Great Northern Railway Bridge over the Hawkesbury, the bulk of the stock traffic is taken by rail from Muswellbrook. I append a return from the Railway Department, showing stock sent down from the Muswellbrook Station during the past three years, the result since opening of the railway bridge over the Hawkesbury being 14,690 in 1889 against 4,992 in 1888, and 6,775 in 1887. It must be remembered that the Hawkesbury Bridge was only opened in May, 1889, so that the increase is due only to about half of that year.

The other grounds on which a bridge is demanded, viz., for facility of communication with Jerry's Plains township, certainly are not sufficient to warrant an expensive bridge. The distance from Jerry's Plains, by way of a bridge at Gee's Crossing to Liddell Platform, would be some 13 to 14 miles; by the fair-weather road, *via* Maison Dieu, it is only 17 miles to Singleton and would always be preferred. In flood the access to Singleton is always maintained by the Warkworth route, the distance being 21 miles. The northern communication from Muswellbrook and Denman to Jerry's Plains cannot at present be very important, still it is worth while considering whether the opportunity now afforded of dealing with landholders for roads of access to a bridge should not be taken advantage of, and whether a timber bridge might not be erected, the cost of which I estimate at £6,550; road approaches and resumption would probably cost £3,450 more; or a total of £10,000 in all.

This estimate is for a timber bridge, 15 feet roadway; but the cost of a composite bridge on iron piers, with 20 feet roadway, approaches, &c., included, Mr. M'Donald estimates at £17,000.

F. WELLS,
Engineer for Roads.

Return of Live Stock forwarded from Muswellbrook Station from May to December, 1887, 1888, and 1889.

1887. May to December.					1888. May to December.					1889. May to December.					Total.
Horses.	Cattle.	Calves.	Sheep.	Pigs.	Horses.	Cattle.	Calves.	Sheep.	Pigs.	Horses.	Cattle.	Calves.	Sheep.	Pigs.	
228	563	415	5,245	324	172	789	603	2,931	497	175	2,627	517	1,1054	317	26,457

Horses	228	172	175	
Cattle	563	789	2,627	
Calves	415	603	517	
Sheep	5,245	2,931	11,054	
Pigs	324	497	317	
Totals	6,775	4,992	14,690	26,457

THOS. G. WARDEN,
10/2/90.

C.

* Described as a continuous girder, 560 feet long, with timber deck; roadway, 18 feet; piers, iron filled with concrete.

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C.

Supplementary Report by Colonel Frederick Wells.

Re *Jerry's Plains Bridge, at Gee's Crossing.—Stock traffic.*

Since writing my last report, I have made further inquiry as to the stock traffic likely to use a bridge over the Hunter, near Jerry's Plains, if one were erected; and the result is confirmation of my opinion that the Northern cattle traffic is now principally conducted by railway, and that all the A.A. Company's stock is now so travelled I hear of a large increase, however, in the number crossing Richmond Bridge. This is, I believe, owing to the Riverstone Meat Works, and a large proportion probably travels Bell's Line from the West. It is hoped by the Stock Department, that ere long, fat cattle will be slaughtered in the country, and still further diminish the droving of stock. It might be advisable to take the evidence of Mr. Alford, Stock Inspector, of Singleton District.

F. W., 18/2/90.

Commissioner and Engineer-in-Chief.

[One Plan.]

Sydney: Charles Potter, Government Printer—1890.

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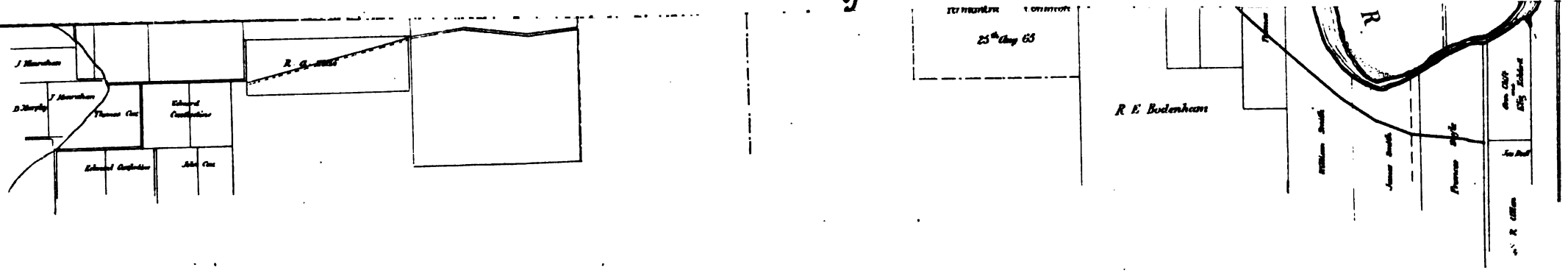
PLAN SHEWING SITE

of



John A. Macdonald M. Inst: C.E. M. Inst: M.E

Engineer for Bridges

(Sig. 61.)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

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1890.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLANS,

RELATING TO THE

PROPOSED BRIDGE

TO CONNECT

BULLOCK ISLAND WITH THE MAINLAND AT NEWCASTLE.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37, section 8.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1890.

[2s. 8d.] 72—A

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MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable JOHN LACKEY, Vice-Chairman.
The Honorable ANDREW GARRAN.
The Honorable FREDERICK THOMAS HUMPHERY.
The Honorable WILLIAM JOSEPH TRICKETT.
The Honorable GEORGE HENRY COX.

LEGISLATIVE ASSEMBLY.

JOSEPH PALMER ABBOTT, Esquire, Chairman.
JACOB GARRARD, Esquire.
HENRY COPELAND, Esquire.
JAMES EBENEZER TONKIN, Esquire.
WILLIAM SPRINGTHORPE DOWEL, Esquire.
EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN HURLEY, Esquire.
CHARLES ALFRED LEE, Esquire.

MEMBERS OF THE SECTIONAL COMMITTEE.

The Honorable ANDREW GARRAN, Chairman.
The Honorable WILLIAM JOSEPH TRICKETT.
EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN HURLEY, Esquire.

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Minutes of Evidence taken by the Sectional Committee.
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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

BRIDGE TO CONNECT BULLOCK ISLAND WITH THE MAINLAND AT NEWCASTLE.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the first Session of the present Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, and the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, to whom was referred the duty of considering and reporting upon the expediency of "erecting a bridge to connect Bullock Island with the mainland at Newcastle," have, after due inquiry, resolved that it is not expedient the proposed bridge should be erected, and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly :—

Description of the proposed bridge.

1. The proposed bridge appears from the evidence to have been recommended by the late Commissioner and Engineer-in-Chief for Roads and Bridges, as a work which would fit in with the reclamation of a part of Newcastle Harbour, between the mainland of Newcastle at Honeysuckle Point and Bullock Island, and with the dredging of a new channel there, which reclamation and dredging form portions of certain works for the improvement of Newcastle Harbour that have been under the consideration of the Public Works Committee, and are about to be carried out by the Harbours and Rivers Department. The bridge was intended to be one of iron having two spans with lattice girders about 100 feet, one on each side, and showing two openings of 65 feet each, with a swing span in the centre giving two swing openings, the deck to be of iron, with tarred metal on the top.

Bridge at present in use.

2. At the present time Bullock Island is connected with the mainland at Newcastle by a wooden bridge which has been erected for about twenty-five years, and is now very much out of repair, and unsafe. This bridge, which was built by private enterprise and afterwards purchased by the Harbours and Rivers Department, occupies a position to the east of the site of the proposed new bridge, and while the present bridge extends across a waterway which passes the southern end of Bullock Island and leads into Throsby's Creek, the proposed bridge would, if erected now, be built on dry land, the water channel which it is expected to cross being a matter of the future when the intended reclamation and dredging works shall have been completed.

Proposal to postpone the erection of the bridge.

3. The Department of Public Works proposes that the erection of the new iron bridge be deferred until the reclamation and dredging works have been carried out. The present Commissioner and Engineer-in-Chief for Roads and Bridges explains that it will probably be from five to ten years before the reclamation and dredging works are completed, and he contends that it is not necessary to erect the proposed bridge at the present time. Its erection, he states, would mean an annual expenditure of £2,000 for interest and cost of maintenance, whereas a temporary wooden bridge, sufficient to meet all requirements until the proper time arrives

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arrives for the erection of the proposed iron bridge, might be built alongside the present one for about £3,000. A further reason put forward for the postponement of the erection of the iron bridge is a desire expressed by the Railway Commissioners that the bridge should be a high-level one, in order that, if they can obtain for railway purposes the land which it is intended to reclaim, the bridge may be high enough not to interfere with the movements of rolling-stock, this desire being accompanied by an offer to contribute £17,000, the amount estimated as the extra sum which would be required to make the bridge a high-level instead of, as at present intended, a low-level one. The new temporary wooden bridge would be built on the west side of the present structure, the old bridge being kept in use until the new one was completed.

Opinions of the people of Newcastle and Bullock Island.

4. The proposal to build a temporary wooden bridge, and to defer the erection of the permanent iron structure until after the completion of the reclamation and dredging works, does not find favour with the people of Newcastle and Bullock Island. They contend that the present traffic between Newcastle and Bullock Island, the importance of Bullock Island as the locality where most of the coal-shipping trade of the port of Newcastle is carried on, and the general claims which Newcastle has to be liberally treated in the matter of Government expenditure, are strong reasons why the iron bridge should be erected at once; and they further urge that the suggested postponement for a few years will probably prove a postponement indefinitely, and that in such case the bridge may never be erected.

The inquiry by the Committee.

5. The Committee have spared no effort to obtain a clear insight into the matter. The evidence obtained from the departmental officers was followed by the appointment of a Sectional Committee, who visited Newcastle, inspected the present bridge and the sites of the proposed bridges, and took evidence from a number of local witnesses. After the return of the Sectional Committee to Sydney, further evidence was taken from the Commissioner and Engineer-in-Chief for Roads and Bridges; and the Hon. J. N. Brunker, Minister for Lands, who is well acquainted with Newcastle and Bullock Island, and expressed a desire to be heard, and Mr. Alexander Brown and Mr. James Fletcher, two of the Members for Newcastle, were also examined.

Decision of the Committee.

6. The Committee, after carefully considering the whole of the evidence and the Report of the Sectional Committee, are of opinion that it is not expedient the bridge, as referred to them for inquiry, should be constructed; that, instead of this bridge, the more expensive high-level structure recommended by the Railway Commissioners should be erected as suggested by the present Engineer-in-Chief for Roads and Bridges; and that, pending the erection of this high-level bridge, a temporary wooden bridge, adjoining the present one, should be constructed, at a cost not exceeding £3,000. This temporary bridge will certainly be sufficient to meet the requirements of the traffic between Newcastle and Bullock Island for some years, and the high-level bridge, which it is proposed shall follow the completion of the reclamation works, can very well be postponed. To erect the high-level bridge now, would be to prematurely incur a heavy annual charge for interest and maintenance, and provide a structure beyond what is necessary to accommodate the present traffic, and which, until the intended harbour improvements in its vicinity are carried out, would, in a large measure, be useless. On Wednesday, 19th March, 1890, at a meeting of the Committee,—

Dr. Garran moved,—"That, in the opinion of the Committee, it is not expedient that the proposed Bridge to connect Bullock Island with the mainland at Newcastle, as referred to the Committee by the Legislative Assembly, be carried out, because the evidence shows that a bridge to cross the railway at a high level, at a cost of about £17,000 more, would be preferable."

Mr. Lackey seconded the motion.

Mr. Dowel moved,—"That the motion be amended by the omission of the word 'not,' before the word 'expedient.'"

The

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The amendment was seconded by Mr. Hurley, and negatived, on the following division, upon the question "that the word proposed to be omitted stand part of the clause":—

Ayes, 10.	Noes, 2.
Mr. Abbott,	Mr. Dowel,
Mr. Lackey,	Mr. Hurley.
Dr. Garran,	
Mr. Humphery,	
Mr. Trickett,	
Mr. Cox,	
Mr. Garrard,	
Mr. Copeland,	
Mr. Tonkin,	
Mr. O'Sullivan.	

Mr. Trickett moved,—"That the motion be amended by the addition of the words 'but that pending the erection of the permanent structure, so as to provide for the traffic, a temporary bridge adjoining the present dangerous one, should be erected at a cost not exceeding £3,000.'"

The amendment was seconded by Mr. O'Sullivan, and passed, and the motion, as amended, was then agreed to.

Suggested resumption of frontages to Throsby's Creek.

7. The Committee direct attention to the fact drawn out in evidence, and referred to in the Report of the Sectional Committee, that the proposed dredging above the bridge would be largely in the interest of the frontage-holders in Throsby's Creek, the value of whose holdings would be thereby increased threefold, and that the opinion was expressed by witnesses that it would be policy on the part of the Government to resume possession of this part of the foreshore prior to incurring the expenditure.

J. P. ABBOTT,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 29 April, 1890.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

BRIDGE TO CONNECT BULLOCK ISLAND WITH THE MAINLAND AT NEWCASTLE.

TUESDAY, 25 *FEBRUARY*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. John Lackey.	Jacob Garrard, Esq.
The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	John Hurley, Esq.

The Committee proceeded to consider the proposed Bridge to connect Bullock Island with the Mainland at Newcastle.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, sworn, and examined:—

R. Hickson, Esq. 25 Feb., 1890.

1. *Mr. Humphery.*] What is your position in the Government service? Commissioner of Roads.
2. Have you any statement to make in connection with the proposed bridge at Bullock Island? It was proposed to construct a bridge at an estimated cost of £33,000. For reasons which will be explained hereafter, the department considers it premature to build that bridge at present, and it is proposed instead to erect a small bridge, at a cost of about £2,500, or £3,000 at the outside, to meet the present traffic. This is necessary because the old bridge is absolutely unsafe.
3. Where is the old bridge to which you refer? The old bridge is under the black strip on the map. The proposal in connection with the harbour improvements was to reclaim a piece of land, shown on the map, and to excavate a channel west of the new dock, with the view of making a channel to a future basin which may have to be made near the railway bridge. But it will be a very considerable time—I should say, putting it at a minimum, five years, but probably ten—before that reclamation will be completed, and to put a bridge up there, at a cost of £33,000, would mean an annual expenditure of £2,000 a year for interest and cost of maintenance. Therefore I think it is premature to erect the proposed bridge now, and would suggest that a bridge alongside the present one be built, at a cost of about £3,000.
4. When was the old bridge built? It must be twenty-five years old.
5. Do you know what it cost? It was built by private enterprise and was afterwards purchased by the Harbours and Rivers Department, in whose care it was for a great many years.
6. Do you know the price they paid for it? I think it was between £700 and £800.
7. And you think a bridge built at a cost of about £2,500, or £3,000 at the outside, will meet all the requirements for some years to come? Yes.
8. Will you state under what circumstances it was proposed to build a costly bridge such as that placed before the Committee for its consideration? This costly bridge will be necessary. It is only a question as to when it will be required. When the proposal was brought forward it was thought that the reclamation would be completed in a short time; but the Committee will see at once that the reclamation is a very extensive piece of work, and will occupy some years. Therefore, I think the proposal to build a bridge which would entail an annual expenditure of £2,000 a year is premature, when we can get a bridge to last for some years at a cost at the outside of £3,000.
9. Who recommended the construction of the bridge now before the Committee? It was recommended by my predecessor, Mr. Bennett.
10. Have you any papers in connection with Mr. Bennett's recommendation? Yes, but I have not brought them with me.
11. You say that the bridge originally proposed is unnecessary at the present time? Yes.
12. And is the bridge that you propose to substitute absolutely necessary? Yes, it is; the present bridge being unsafe.
13. *Dr. Garran.*] Will you kindly tell the Committee how many cranes there are on this wharf? Twelve.
14. When you build the large basin which you propose to construct how many cranes will you have all round? It is proposed to put seven there.
15. That will only occupy the eastern side of the basin? Yes.
16. Then you will have all the western side and the northern piece? Yes.
17. How many ships will you be able to accommodate in the basin? The proposal before the Committee with regard to these harbour improvements will accommodate nine vessels loading at the cranes.

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R. Hickson, Esq. 25 Feb., 1890.

18. Then you will have all the rest for wharfage? Yes.
19. You will have nearly double the wharfage accommodation that exists at present? Yes, when the basin is completed.
20. If you double the existing accommodation by making the large basin you will not want the little basin at all? Yes.
21. How many years do you think it will be before double the accommodation will be too little for the traffic? It is very hard to say. A great number of years.
22. In addition to the shipping accommodation there will be wharfage accommodation along the south bank of the river all the way from Merrywether-street to the bridge? Yes.
23. That will more than double the existing wharfage? Yes.
24. But until the existing wharfage turns out to be too little you will not want any more wharfage? No; the Government will not want any more wharfage.
25. So that this bridge really will not be wanted until you require to make this inner basin? It is not a question of making the inner basin. It is all private land, and we should, I think, give access to the wharf built by private enterprise.
26. But this land is not available for wharfage purposes now, because you have your bridge, which prevents its being available? That is so.
27. And until you move that bridge away these people cannot use the land for wharfage? No.
28. Then they have not really got a wharfage frontage? No.
29. You propose to create a new water frontage for them at the Government expense? Yes. We propose to give them access to their water frontage.
30. To create, in fact, a new water frontage? Yes; practically to create a new water frontage.
31. They could not get a single schooner up to the water frontage now? No; only a boat.
32. If you were to build this bridge at the present time you would really be building it on dry land? Yes.
33. And then you would make the scour afterwards underneath it? If we were to build the large bridge at a cost of £33,000 we would cut the channel and make the bridge at the same time.
34. Still you would build it where there is dry land now? Yes.
35. And where there would be no channel until you scooped out the basin? No.
36. But for public purposes the basin will not be wanted until you have used up all the existing wharfage, and require more? No.
37. That is to say you will have to more than double all the present wharfage requirements before the inner basin can be wanted? Yes.
38. And then that inner basin will be all private water frontage? Yes.
39. *Mr. Garrard.*] Is it a fact that during the last few years the whole of the coal-shipping appliances in connection with the A. A. Company's ships have been shifted from Newcastle to Bullock Island and Carrington? Yes.
40. Making Carrington a busy place? Yes.
41. And settlement is going on there very rapidly? It is.
42. Is it true that the town was recently incorporated? Yes; I think a couple of years ago.
43. And it is making very rapid progress? Yes.
44. And there is a great deal of traffic over the present bridge which you say is dangerous? There is a good deal of traffic over the present bridge, and that structure is absolutely dangerous.
45. I suppose, as additional facilities for the shipment of coal are given, a very much larger traffic may be anticipated? Yes.
46. I presume the £33,000 bridge was designed to work in with the complete scheme of works carried out by the Harbours and Rivers Department? Yes.
47. Do you know what portion of the works will be completed first by the Harbours and Rivers Department? The wharf on the inner side of Bullock Island.
48. You know that from consultation with the present engineer of the Harbours and Rivers Department, and also because you were acting as engineer under that department? Yes. Before I left the department a commencement was made on the south wharf at Bullock Island, and one of the new sand pump dredges is excavating there now.
49. Then knowing exactly how it is proposed to carry out the basin works you believe that the new bridge will not be required for at least five years? Yes.
50. Where is the site of your proposed new wooden bridge? Alongside and to the west of the old one. The object of this is that we may have the use of the old bridge until the new one is completed, and when we come to build the more expensive bridge, as we shall no doubt do in time, this bridge will still afford means of getting across the river to Bullock Island.
51. And your permanent bridge of the future will be even further west than the proposed temporary bridge? Yes.
52. You will make use of your present roadway, I suppose, for your temporary bridge? Yes.
53. Both sides? Yes.
54. What is the width of the proposed temporary bridge? About 22 feet.
55. Are there any footways besides, or is that all the carriage-way? It is only the carriage-way. It is not a very long bridge.
56. Are you going to put a camel's back on it, the same as at present? I think it will be necessary to allow the lighters to go underneath.
57. And you think that will last and serve all purposes for five years, when the larger structure will be taken in hand? I do. I think a very considerable saving will be effected by adopting that plan.
58. Has your temporary project been put before the people of Newcastle and Carrington? I do not know.
59. I do not suppose they will like it? I do not know; what they want is to get a proper bridge to enable them to get across the river.

John

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John Alexander M'Donald, Esq., M.I.C.E. and M.I.M.E., Engineer for Bridges, sworn, and examined :—

J. A. M'Donald, Esq., M.I.C.E., M.I.M.E. 25 Feb., 1890.

60. *Mr. O'Sullivan.*] You are the designer of the proposed bridge between Carrington and the mainland at Newcastle, are you not? Yes. No detailed drawings for it have been got out yet.
61. Then what stage has it reached? A survey has been made, but no detailed drawings have been got out yet.
62. Can you tell the Committee what character of bridge is proposed? When the Harbours and Rivers Department had their scheme before the Committee it was proposed that our department should erect an iron bridge with two openings of 65 feet each, and the estimated cost, without any detailed drawings or detailed quantities, was £33,000.
63. That estimated cost then is only approximate? Yes. It could not be guaranteed as being within 10 per cent. of the actual cost.
64. Then you have only proceeded as far as the preliminary stage in making a survey for the bridge? Yes. We have been waiting to see what action the Harbours and Rivers Department would take in reference to the reclamation, because the bridge as proposed would be on dry land.
65. Have you now received orders from the department to abandon this bridge? No. The matter has been left in the Commissioner's hands so far as to what should be done. I have no definite instructions from him what to do in the matter.
66. Would this bridge correspond with the iron bridge at Nowra over the Shoalhaven? No. There would be two spans with lattice girders about 100 feet, one on each side, a swing span in the centre giving two swing openings.
67. With a timber deck? No. It was proposed to have an iron deck, with tarred metal on top.
68. *Chairman.*] What proceedings were taken in your department with reference to the construction of this bridge before the matter was referred to Parliament? I had taken no proceedings at all myself.
69. I am asking you what steps were taken in your department? This work was referred to the Committee by Parliament on the 3rd October, 1889, at the instance of the Minister. I am asking you now what proceedings had been taken in your department in connection with this bridge, as to the preparation of plans and estimates of expenditure prior to the 1st October, 1889? None.
70. Had the matter been before you at all? I think not—before the 1st October.
71. Then, so far as you know, the matter was presented to Parliament without any consideration by the department at all? So far as I know, yes.
72. And the evidence which is given now as to the inadvisableness of building the bridge could have been obtained just as well before the work was referred to the Committee? Yes.
73. But it was not obtained, was it? No, it was not.

THURSDAY, 6 *MARCH*, 1890.

Present:—

The Honorable JOHN LACKEY (Vice-Chairman).

The Hon. Andrew Garran.	Jacob Garrard, Esq.
The Hon. Frederick Thomas Humphery.	Henry Copeland, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.

John Hurley, Esq.

The Committee further considered the proposed Bridge to connect Bullock Island with the Mainland at Newcastle.

Hugh M'Lachlan, Esq., Secretary to the Railway Commissioners, sworn, and examined :—

H. M'Lachlan, Esq. 6 March, 1890.

74. *Vice-Chairman.*] You are Secretary to the Railway Commissioners? Yes.
75. You are aware that it is proposed to construct a bridge at Bullock Island, and you have volunteered some evidence on the subject on behalf of the Commissioners? Yes.
76. *Mr. Garrard.*] The Railway Commissioners understand that the proposal now before the Committee is for a low-level bridge? Yes.
77. And in view of the possibility of their requiring to use the reclaimed land for railway purposes they would like to have a high-level bridge, to the cost of which they are willing to contribute £17,000? Yes.
78. And they recognise that it will be some time before this bridge will be required—in fact not until the reclamation is carried out? Yes.
79. *Dr. Garran.*] It is not absolutely certain that the Railway Commissioners will get this reclaimed land? Of course they will make that condition. They would not give £17,000 without getting the land.
80. The reclamation is to be made out of the land dredged from the proposed channel? Yes.
81. Therefore you cannot possibly use it until the mud has been dredged up? No.
82. The question for us to consider is whether, as it will probably be five years before that dredging is finished, we should not, for the immediate convenience of the Bullock Island people, renew the present dilapidated bridge *pro tem*? That is the idea of the Commissioners—that an inexpensive bridge might be erected to meet present requirements, in view of the larger scheme which will be necessary when the reclamation is carried out.
83. Then the Commissioners have nothing to say against a temporary bridge? Certainly not. They recognise that the convenience of the people must be met, and that it is absolutely necessary to renew the existing bridge for the present.
84. And it will be time five years hence to discuss the question of a permanent bridge? Five or six years. The Commissioners think it would be most unwise to make a low-level bridge, because the land would be cut off into two parts and it could not be worked for railway purposes.
85. And the opinion of the Commissioners is against a low-level bridge at the present time? Yes.

WEDNESDAY

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WEDNESDAY 12 *MARCH*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman.)

The Hon. John Lackey.	Jacob Garrard, Esq.
The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	John Hurley, Esq.

The Committee further considered the proposed Bridge to connect Bullock Island with the Mainland at Newcastle.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, sworn, and further examined:—

R. Hickson, Esq. 12 Mar., 1890.

86. *Dr. Garran.*] With regard to your first estimate for a temporary bridge at Bullock Island, will £3,000 be a sufficient sum for the work? We can do it for that amount.
87. How soon can you get the bridge open for traffic from the time you get orders to begin the work? In six months.
88. Will the construction of that bridge interfere with the traffic over the existing bridge? No. I will make it so that it will not do so.
89. What is your opinion, after examining the old bridge, as to what it would cost to make that safe for three, or four, or five years? I think it would be just as cheap to put up a new one as to make this one safe. We would practically have to re-make it, and during the time we were doing so it would be very inconvenient for the traffic.
90. The proposal for a new bridge is not more expensive, and much more convenient to the public? Just so.
91. How long will it take to complete the reclamation on the shore line of Newcastle and to construct the proposed high-level bridge? The reclamation works I cannot answer for, as they are under another department; but the bridge ought to be erected in from eighteen months to two years.
92. You can go to work at once, I presume, without the approach, or the railway enclosure? Yes.
93. If you did that, would you make a channel over which the swing-bridge is to go before sinking your piers, or would you do it afterwards? If the bridge was to be built at once, I think I would commence sinking cylinders at once on the land.
94. And leave the excavation to be done afterwards? To be done by the Harbours and Rivers Department; our department would not do it in any case.
95. You could put your piles down so that they would not be interfered with by the excavations? Yes.
96. They could make the excavations without knocking the piles about? Yes.
97. You could build the bridge even if the other works were never carried out? Yes.
98. You could do your part of the work in two years? Yes.
99. Does that refer to the bridge as you have put it to the Committee, or to the bridge as the Commissioners have suggested? To the bridge which I put before the Committee.
100. With a high-level bridge it would take a little longer? Yes, a little. I suppose two and a half years would be the outside. I would point out a very great difficulty in making the bridge as suggested by the Commissioners. I do not see very well how it could be done until the reclamation has been carried out, except at a very considerable cost. If we had the reclamation done we should have the foundations, to a very great extent, in for the structure—it would be across the railway; but if we were to put these piers down now we should have to go right into the present channel and make them very much deeper.
101. These piers will all go into soft earth, you must go below that considerably to get solid ground? It would not be very soft, it would be sand. If you can keep sand from the action of water, and of the weather, it is a very good foundation. Most likely we shall place iron piers on concrete beds to carry the superstructure.
102. If you put down your piers after the reclamation is made you will not go so deep as you would go now? No.
103. It will be quicker and cheaper to make the bridge after reclamation than before? Yes.
104. On the whole you would prefer the reclamation to be made first? Yes, I would.
105. But you can do it without the reclamation? Of course we can.
106. You are aware that the Railway Commissioners have estimated that a high-level bridge will cost £17,000 more than the low-level bridge will? That was an estimate I gave Mr. Eddy in the course of conversation, but it was only an approximate estimate.
107. It is not one you would permanently abide by? No.
108. The extra expense would be caused by the greater height and large number of iron girders? The greater height and the greater length.
109. Do you see any difficulty in rising from the level of Hunter-street to the level of your bridge? No. We can do that. It would involve shifting the rails further north, on to the proposed reclamation.
110. Is this reclamation work done with borrowed money? Yes.
111. The country goes into debt to make this new land? Yes.
112. And when the Railway Commissioners get possession of that will they be charged with the cost of reclamation, or will they get it as a present? That I cannot say.
113. The intention is that they shall then sell the frontage they have in Hunter-street? That is the idea.
114. When they sell that land will the money be credited to their account, or to the Government account? To their account I presume.
115. If they get for nothing what the Harbours and Rivers Department have reclaimed, and then pocket the proceeds of the sale of this frontage they will do a very good thing? Yes; they get now for nothing all that the Harbours and Rivers Department reclaim. All their wharves are made for them and not charged to them.
116. The Railway Department gets all the revenue from them? Yes.
117. They pay no interest? No.

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118. Every crane has been put up with borrowed money? Yes; and the Railway Department gets the revenue from the cranes.
119. And from the whole wharfage of Newcastle in the same way? Yes.
120. If the railway had been in the hands of a private company they would have had to do all that at their own expense? Yes.
121. As it is it is done for nothing by your department? Yes; as far as they are concerned.
122. So far as you are able to form an opinion, do you favour the construction of a high-level bridge over a low-level one? I think a high-level bridge would be the best. If the piece of reclamation was to be used as a railway yard, it would be necessary that the traffic should be carried overhead.
123. There will be seven or eight parallel sidings? At the least.
124. And any one of these being used would stop the traffic on the bridge? Yes.
125. Do you think it would be any serious inconvenience to the island to have that ascent and descent? Not unless there is a tramway made. When I was there there was some talk of a tramway being made. It would be difficult to get a tramway over the island bridge except it were a cable tram.
126. One or two of the witnesses there intimated that a high-level bridge might be inconvenient in the case of heavy girders wanting to be taken to the foundry on the island—would not that be quite avoided by taking them round by Wickham Bridge? They could get a level approach by going over that bridge.
127. You would not consider that to be a serious difficulty? Not at all.
128. You know the site of the Wickham Bridge—the one below the railway bridge? Yes.
129. The Mayor gave it as his opinion that that bridge could be shifted nearer to the railway bridge, with very great advantage—do you agree with that? I do not think there is any necessity for shifting it now. The time may come when it will be wanted for shipping purposes, and it could be shifted then.
130. You don't think there is any immediate demand for more wharves inside of Throsby's Creek. The evidence there went to the effect that when the excavations are all completed there will be something like three times the present accommodation? There are at present twelve hydraulic cranes. This Committee last year passed a proposal which was laid before them for seven more. There is room in that basin for about fourteen more.
131. Including the jetties? Yes.
132. I suppose you cannot predict when these thirty-four cranes will all be in full work? No; it will be a long time, I think.
133. And for public purposes shall we want any Crown wharf frontage above the bridge? Not until these thirty-four cranes are fully employed.
134. The deepening of the basin above the bridge will not be for a public purpose? No.
135. But for the advantage of holders of land on the Wickham shore? Yes.
136. As far as the Harbours and Rivers Department is concerned you have frontage enough at the present? Yes, and for a long time to come.
137. But the object of the swing is to get at this inner basin? Yes.
138. How much extra cost does the swing involve in the construction of the bridge? I cannot tell you exactly; but I should think it will not be less than £8,000 or £10,000.
139. It is only wanted for the purpose of improving private properties, and if it were not for those properties being improved you would be content with a fixed bridge? Yes.
140. *Chairman.*] On the other hand the bridge, when constructed, interferes with private property as it exists at present, doesn't it? They cannot get to it now.
141. *Mr. Hurley.*] What would be the cost of a temporary bridge? £3,000.
142. How long would it take to construct it? About six months.
143. And how long to construct an overhead bridge? Probably two years and a half.
144. At a cost of how much? About £50,000.
145. Towards which the Railway Commissioners propose to contribute £17,000? Yes.
146. Would not the present bridge accommodate foot passengers and light vehicular traffic until such time as a more permanent bridge could be erected? I do not think it would be advisable to leave the present bridge, it is positively unsafe now.
147. Would it be a source of danger to foot passengers? No.
148. Would it not be to the interest of the people on Bullock Island if they were to suspend heavy traffic over the bridge and divert it round by Wickham so that they might secure in time a more permanent structure? I do not think so. It would be a very great inconvenience to the people of Bullock Island to have to go round by that bridge.
149. Suppose the proposed temporary structure is erected, might it not postpone the construction of a more permanent one for a considerable time? I do not think that affects the question.
150. You know the Railway Commissioners have recognized the fact that a low-level crossing is a source of great danger to a large number of people? Yes.
151. You are also aware that the Commissioners propose in connection with the reclamation to straighten out their line between Wickham and the Newcastle terminus? It will be desirable to do so.
152. Therefore they are interested in the reclamation? Very much.
153. And they show their interest by contributing £17,000 towards the erection of a permanent bridge? Yes.
154. You are also aware that it is contemplated that there shall be a tramway between Bullock Island and Newcastle? I heard it mentioned for the first time in Newcastle the other day.
155. Would this temporary structure not carry a tramway? Oh, yes. It could be used for that purpose if the Commissioners decided to make a tramway.
156. You admit that they would be greatly inconvenienced in having a low-level crossing? Yes. A high-level crossing would be best undoubtedly. The present level crossing I understand is not such a great inconvenience for it only crosses two lines.
157. Would not the present hydraulic cranes and the works which are being pushed forward in connection with the inner basin accommodate the shipping, even if the trade were to increase 50 per cent.? It gives them seven more cranes than they have.
158. If the trade of the port were to increase 50 per cent. there would be no necessity to provide additional accommodation for ships to the west of the bridge? Not as far as the Government are concerned.
159. As far as you can see if the trade were to increase 50 per cent a swing bridge is not actually necessary? Not for the shipping.

160.

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R. Hickson, Esq. 12 Mar., 1890.

160. What is the distance from the extreme northerly end of Bullock Island to the main street of Newcastle? I think it is about 2 miles.
161. Seeing that the people have to travel 2 miles it would be advisable that they should be able to reach the city by tram? There are no people at the top end of the island, that is a reserve. If you mean from where the people live at present—that is only about one mile and a quarter.
162. You are aware that a great number of people have settled on Bullock Island during the last five years? Yes.
163. And that the price of land has advanced considerably since the population settled there? I believe so.
164. Have you not heard that there would be ready purchasers for any reclaimed land, or any land which the Government may put up for auction there? I have no doubt there would be.
165. That would necessarily increase the population? Yes.
166. It would be to their advantage to have a tram right into the city? I suppose it would.
167. In view of that contingency is it not advisable to erect a more permanent structure than the proposed bridge? I do not think so, if the temporary structure will meet the requirements of the place, or of the tramway, if it is made, for the simple reason that we should be expending £50,000 on a bridge which would not be required for a great number of years.
168. How long will the temporary bridge last? I should make it last about fifteen years.
169. At a cost of £3,000? Yes.
170. In point of fact you are opposed to the erection of the more permanent structure and in favour of the temporary structure? Yes.
171. What leads you to infer that the one is suitable and will provide all the necessary accommodation as against the other? They will both meet the accommodation, but one at a very much less cost than the other.
172. Would you be favourable to the construction of a tramway over this temporary structure? Yes; Perhaps the word "temporary" is a misnomer. It is a good substantial wooden bridge, practically the same as the bridges we are putting up all over the country.
173. What gave rise in the department to the idea of preparing plans for the more permanent structure? I can hardly answer that. It was all done before I took charge of the department.
174. I suppose you recognize the fact that the Commissioners are favourable to the erection of the more permanent structure? Not that I am aware of.
175. Does not the fact that they are willing to contribute £17,000 towards the cost of the work show that they must be favourable to a high-level crossing? I think the object of making the contribution, as far as I could make out from Mr. Eddy, is to get the land; they will not contribute that sum unless they get the land.
176. If they get this piece of land will they give £17,000 towards the erection of the temporary structure? No.
177. They would not contribute anything towards the temporary bridge? No.
178. Practically, they are giving £17,000 towards the construction of the more permanent structure? They are giving £17,000 for the piece of land that they hope to get. But if they do not get that land they will not give anything at all.
179. If it should be decided to put up a more permanent structure, would it not be to the advantage of the people on Bullock Island to suffer for two years the inconvenience of going round by Wickham, until the work is completed? I do not think so. I do not see what advantage these people could get from the more permanent structure over the temporary one. All they want to do, I presume, is to get across in the most convenient and shortest way to Newcastle. I do not see that it makes any difference to them whether it is a swing bridge or not. The only people that are affected by the question are the people further up Throsby's Creek.
180. But you know that Bullock Island is one of the chief outlets for the population of Newcastle? Yes.
181-2. And that they can secure leases or freeholds there to make homes for themselves? Yes.
183. In view of the prospective population of that island, should not a bridge be constructed which would last for all time? So long as they get a structure which will carry them over safely I do not see that it makes any difference to them whether it is a swing bridge or a closed bridge, whether it costs £3,000 or £50,000.
184. What induced your department to construct permanent iron bridges in other parts of the colony with less population and 50 per cent. less traffic? Because they could not be put up at a less cost.
185. Supposing you had constructed wooden bridges instead of iron bridges over the Gwydir, the Hunter, and other rivers, would you not have saved a considerable sum? Yes. In the light of subsequent events there is no doubt that we could have put up some of the iron bridges at a less cost.
186. You consider that a considerable saving could have been made if some of these iron bridges in the interior had been constructed of local timber? I could not speak in a general way without looking through each bridge. There may be some special reasons why iron bridges would be cheaper and more advisable than wooden ones.
187. *Mr. O'Sullivan.*] The people of Newcastle appear to dread that if they get a temporary bridge now they will not get a permanent bridge for many years; is there any ground for that apprehension? Not that I know of.
188. How long will it be before they start the erection of a permanent structure? I should say whenever the necessity demands it.
189. That may not be for years, if the basin they are now constructing suffices for the trade? It will not be for years, so far as the Government are concerned.
190. Do you not think the railway authorities will press for the reclamation of this land for their accommodation? If they get the land no doubt they will.
191. They appear to be in want of such a place for the trains? Yes. Their present intention is to get that accommodation out at Hamilton, but they would prefer to have it here, no doubt.
192. You would not start the construction of this permanent bridge until the reclamation is made? I do not think it would be advisable to do so until then.
193. I suppose that if the railway authorities press for the reclamation it will be carried out? I cannot say; that is a matter which rests with the Harbours and Rivers Department.
194. *Mr. Garrard.*] Is it true that the whole of the works at Newcastle, such as dredging, and the construction of wharves and cranes have all been paid for out of loan votes? No, the dredging is paid for out of revenue.
195. Excluding the dredging, all the improvements, such as wharves and cranes, have been provided out of loan funds? I think all, without any exception.

126.

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R. Hickson, Esq. 12 Mar., 1890.

196. And when the works are completed they are handed over to the railway authorities? Yes, as regards wharves, cranes, and reclamations.
197. Do you know if the railway authorities pay any interest on the cost of any of these works? I do not think it enters into their books at all.
198. Do you not think it would be a fair thing to charge them with the interest in respect of these works? I suppose it would.
199. What has caused Bullock Island or Carrington to become an important place;—is it not the fact that it is the railway shipping place for coal? Yes, certainly.
200. Do you not think, therefore, that inasmuch as the traffic is created by the railways and for their own benefit, the whole cost of this proposed bridge should be borne by the railway authorities the same as they bear the cost of any overhead bridge over any portion of their lines? No, I do not.
201. Why? They do not benefit in any way by this proposed bridge.
202. The Railway Department does not benefit by the erection of any overhead bridge, but because the absence of a bridge interrupts the traffic they have to provide a bridge for the accommodation of the public. Is not this bridge in exactly that position? I do not think it is quite the same; that would only apply, I think, to that portion crossing their rails. They might say "after you cross our rails we do not care what you do;—you need not erect a bridge at all."
203. You think that the £17,000 which they offer is intended to defray the cost of that portion which would cross their rails? That is what it is intended to do.
204. I think you expressed the opinion that they would not give even that sum unless they got a large piece of reclaimed land for their own purposes? In the conversation which I had with Mr. Eddy over this matter he said that they would be willing to bear the extra cost the department would be put to in carrying a high-level bridge across this portion of reclaimed ground, on condition, of course, that they got the reclaimed land, and to that I replied, "I cannot give you any promise."
205. They have a large area of land at Hamilton which they propose to use for shops and shunting arrangements? I believe so.
206. If they get this reclaimed land they will not require to use the other land? I do not suppose they would to such an extent.
207. In other words they will be able to sell the land at Hamilton and put the proceeds of the sale to their credit? I cannot say; they might want both.
208. *Mr. Copeland.*] This structure is spoken of as a "temporary" bridge; I suppose the idea is simply to construct a wooden bridge of a permanent character? A good substantial wooden bridge which will carry the traffic over the place until it is necessary to put up a larger structure.
209. It would have the same life as the ordinary wooden bridges put up throughout the country? Practically the same.
210. There is nothing temporary about it at all—the word is a misnomer? Yes. The bridge will be as safe and just as serviceable as an iron bridge would be.
211. Just as serviceable. Just as safe? Yes.
212. *Dr. Garran.*] It will have to be pulled up if a swing is to come into use? Yes; it would not be wanted then.
213. *Mr. Copeland.*] You would only build an iron bridge when it became necessary? Yes.
214. *Mr. Hurley.*] The difference I take it between a temporary bridge and a high-level bridge would be that there would be no traffic over the railway lines with a high-level bridge? On the level, no.
215. But with the proposed temporary structure you would have to carry all your traffic over the railway lines? You would carry it over the present two lines.
216. Or over any increased number? They cannot increase the number until the reclamation is made.
217. If the reclamation is carried out there is a probability of more lines being laid there? No doubt.
218. Therefore, with a low-level temporary structure all the traffic would have to cross these lines? Yes; if they carried it right through the present workshops. The proposed approach to the new bridge would be in the centre of the reclamation; the present approach is right at one end of it. It is very questionable whether they will carry these lines right through into what is their present workshop, or whether they will make them dead ends. If they make them dead ends none of these lines will cross the proposed approach at all.

THURSDAY, 13 *MARCH*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. John Lackey.	Jacob Garrard, Esq.
The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	William Springthorpe Dowel, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.
The Hon. George Henry Cox.	John Hurley, Esq.

Charles Alfred Lee, Esq.

The Committee further considered the proposed bridge to connect Bullock Island with the Mainland at Newcastle.

Hon. James Nixon Brunker, M.P., Minister for Lands, sworn, and examined:—

Hon. J. N. Brunker, M.P. 13 Mar., 1890.

219. *Dr. Garran.*] What is your position in the Government? I am Minister for Lands.
220. You have long been a resident in the Hunter River district? I am a native of the district.
221. You are thoroughly well acquainted with Bullock Island? Yes.
222. And with the existing communication and what is proposed? I do not know so very much about what is proposed, except that a bridge is proposed to be erected to connect the mainland with the island.
223. You know that the present bridge is really unsafe? I could not say that from my personal knowledge, but I believe it has been said.
224. You know that the engineer has refused to allow loads of more than 3 tons to go over it? I was not aware of that.
225.

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Hon. J. N. Brunker, M.P.

13 Mar., 1890.

225. We have it in evidence that that is the case, and that it will cost as much to make that bridge safe for the next two or three years as it would to construct a new bridge at a cost of £3,000. Under these circumstances do you think it better to tinker up the old bridge than make a stronger and safer one by the side of it? I think that would depend very much upon circumstances, and the conditions under which the Public Works Department intend to act with regard to the construction of a permanent bridge. I think the importance of the place demands that the facilities for traffic should be made as easy and as good as possible, and if it is their intention to build a bridge the sooner it is done the better.

226. You are of opinion that communication with the island ought to be maintained by the present road? Yes, for several reasons. The Government have a very large area of unalienated land there. This plan shows the portions of unalienated land. These lower portions when reclaimed would be equal in value to, if not greater in value than that of those which have been already alienated. Then on the opposite side—the Newcastle side—there is a very large area, a portion of which is now being reclaimed, belonging to the railways, which is also of considerable value. The values of all these lands will be very considerably increased by the construction of a permanent bridge which would have allowed full facilities for traffic, and the people wish means for getting to and fro, which they do not possess at present. I believe the present bridge for very many years has been an anomaly so far as the importance of the place is concerned.

227. A large part of the unalienated land is at present too low and swampy for occupation? There is a very large area which is unfit for occupation, but as the Government are continuously dredging the harbour, the silt might be utilized in reclaiming the land, the same as is done at Cook's River, where land is not nearly so valuable.

228. Would it not pay to reclaim this land with silt from the harbour? Yes.

229. It is the policy of the Government to reclaim the swampy portions, and bring them into the market, and so recoup themselves the cost of the reclamation? That is the intention.

230. The portion remaining unsold will represent a handsome surplus after paying the expenses of the reclamation? There is no doubt about it. Bullock Island, in some places, is worth from £2,500 to £4,000 an acre.

231. You will have practically to pile all the water margin round? I do not know whether that will be necessary—it has not been done at Cook's River.

232. Is there the same wash at Cook's River as at the Hunter River? The wash in that part of Throsby's Creek is not very great.

233. On the river side? That would be protected by the dyke.

234. It does not run to the full north end of the island? It runs very nearly to the end of the island.

235. Do you know, as Minister for Lands, whether any portion of that island is reserved? I see there is a small reserve of 15 acres.

236. That is the full amount you propose to reserve? That is the amount already reserved.

237. And taking that out you have enough land left to leave a handsome balance? A very large one, I should think.

238. So that the cost of the bridge could be paid for out of the proceeds? Yes, and leave a large margin besides.

239. No special account, I presume, is intended to be kept of the proceeds of the sale? I cannot say.

240. You are aware that on the Newcastle frontage it is proposed to make a large reclamation? That is being made.

241. Which the Railway Department desires to have for sidings when it is completed, and which would be on the east and west sides of the bridge road? Yes.

242. You are aware that at present the road is a level crossing? Yes.

243. Which is often inconvenient to the inhabitants, and often inconvenient to the Railway Department? There is considerable delay there at times.

244. If these sidings were put in the use of any one of them would block the crossing? Yes.

245. So that with seven lines of sidings the need of an overhead bridge becomes far greater than it is now? It would prevent considerable delay, and of course assist the Railway Department very much.

246. With seven parallel sidings would it not be very undesirable to have a level crossing? It would be unsafe.

247. Would it not be much to the advantage of Bullock Island and Newcastle that the bridge should go overhead? I do not know. I should like to know something more about the construction of the bridge, and what it is like, before I give a definite answer.

248. Would you go to the expense of constructing an iron bridge to cross all these sidings? I think we have sufficient engineering skill in the colony to devise a scheme for the construction of a bridge which would suit all kinds of traffic, and if they could construct a bridge which would prevent the inconvenience that would arise from interfering with the railway traffic, and also afford facilities for general traffic to the island, I think their advice might very well be accepted. They could give a much better opinion on that subject than I could.

249. Could any engineering skill make a level crossing across seven lines of rails without interfering with the road traffic or the railway traffic? A high-level bridge could be constructed, but it might interfere very materially with existing rights; not only so, but it might tend to impede rather than increase the traffic from one point to another.

250. In what way would it interfere with existing rights? It would depend where the landing would be on each side. On the north side it would not matter, because it is all Government land, but on the south side large existing rights are concerned.

251. The entrance to Bullock Island will be where it is now. On the other side it is proposed to shift a little more to the west, and come straight in line with Union-street. Would that be interfering with anybody's rights? I could not say without I saw a plan of the proposed bridge.

252. It is supposed to be much more convenient to Newcastle to erect it in a line with that street? It will be much better.

253. It would not interfere with anyone's rights? It would depend on where the landing was and on the gradient.

254. The gradient would have to be safe enough to carry you 15 feet clear over the head of the rails? That would be a very heavy lift.

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Hon. J.N. Brunker, M.P. 18 Mar., 1890.

255. The evidence from Bullock Island was that for ordinary traffic they would rather submit to that gradient than suffer the delay which must necessarily take place if they have a level crossing, and that the inconvenience would only be when there was specially heavy iron goods, and which might be avoided by crossing Wickham bridge. Have you anything to say otherwise? No. The objection I would have to the high-level bridge is that it would prevent any heavy traffic at all.
256. Granting that occasionally very heavy loads would have to go round a mile, would that be less inconvenient than having to cross on the level? It would be safer. I do not think it would be less inconvenient.
257. If the people of Newcastle on the whole are more favourable to a high than a low-level crossing you would not wish it otherwise, would you? I should not be guided by the people of Newcastle in my opinion. I should be guided by the opinion of the engineer.
258. The engineer says that it would be practically impossible to take the traffic over that number of crossings? It would be no use building a bridge, then.
259. I am asking the questions because the engineer's decision is decidedly in favour of a high-level bridge, and the feeling both in Bullock Island and Newcastle acquiesces in that decision, notwithstanding the little gradient that will be involved. Under these circumstances do you not think that a high-level bridge is to be preferred to a low-level bridge? I think so, if the gradients are regulated to meet general requirements.
260. You have nothing to urge against that decision? I think a bridge is absolutely necessary and ought to be constructed at once, or as soon as possible, if they are to have one at all.
261. Do you see any objection, as the Minister of the department interested in the reclaimed land, to that land being vested in the Railway Commissioners?—Will the fact that the Railway Department owns the present frontage vest in them the land which is to be reclaimed? I do not know whether the Railway Department will have to adopt the same course as a private individual would, but if they did the application would be dealt with in the usual way by the Lands Department.
262. The work of reclamation is being done at the expense of the Harbours and Rivers Department, and if the Railway Commissioners take possession of this land, will they compensate that department for the expense, or will they simply take possession and say, "thank you"? That will be a matter between the Railway Commissioners and the Works Department—not the Lands Department.
263. The Railway Department will get the benefit of the expenditure of capital? All persons who get the right to reclaim have that benefit.
264. Do they not reclaim at their own expense? I suppose so.
265. The Railway Department is not reclaiming at its own expense? No; but that will be a matter for consideration between the Harbours and Rivers Department and the Railway Department.
266. Does it not affect the capital account of the Railway Department? I think it will increase it a good deal.
267. It would not increase it if they were charged nothing for it? No. If they get the Harbours and Rivers Department to make the reclamation and the land falls into their hands afterwards it would increase their capital very considerably, because the land would be very valuable.
268. Is not the Railway Department at the present time enjoying the benefit of the dyke and all the cranes which have been erected? Yes.
269. Where not the whole of those works constructed at the expense of other departments? No. A great deal was constructed at the cost of shipowners.
270. They have paid the interest on it, but they have not paid the capital? No, they bought the material with which the wharves were made.
271. Except that portion which they had to put out somewhere, the shipowners contributed nothing to the capital? No, but that was a very heavy charge on them.
272. They had to leave the ballast somewhere, and it was convenient for them to put it out at the dyke? Yes, but it was a considerable charge on them. These works were constructed at a small cost originally.
273. The Government has gone into debt for the dyke? Yes.
274. And the Railway Department is getting the revenue from that expenditure without having contributed any of its own capital towards it? I cannot say that, because they have constructed railways which lead to the dyke, and which afford facilities for shipping coal.
275. They have constructed a branch line to the island? They have made a branch line and several sidings.
276. Beyond constructing their own access they have not built the dyke itself? No.
277. Therefore to a large extent they are working on the capital of the Harbours and Rivers Department? Yes, as far as the dyke is concerned.
278. In connection with this new bridge it is proposed to have a swing and to deepen the channel to enable vessels to get to the inner basin. It is also proposed to erect additional cranes, and it is estimated that when the whole of these works are completed the accommodation for shipping will be three times as large as it is now;—do you think that such accommodation will last Newcastle for a considerable period? I should like to see where three times the accommodation is to come from.
279. It is proposed to increase the number of cranes from twelve to thirty-five, do you think that that accommodation will last Newcastle for some time? I think it will meet the demand for shipping facilities with the two miles of wharfage already available.
280. Do you think there is any immediate demand, on public grounds, for making the inner basin? I do not think there is, beyond deepening the channel for vessels of light draught.
281. You observe that it is intended to improve the wharfage on the west side of Bullock Island at the south-west point, but the evidence goes to show that we shall not want that for public purposes for a very long time to come? I do not think we will. I do not think that the channel ought to be stopped; these people ought not to be deprived of their water rights.
282. We are told that there is a frontage of 1,000 feet on the Wickham shore, the owners of which desire the inner basin to be excavated with the least possible delay in order that they may make timber wharves;—do you know anything of that? I do not. I think that in making this reclamation the channel might be so deepened as to give as much water as they require to carry on a business of that kind.
283. We are told that the original grants of these 1,000 feet of land on the Wickham shore were issued with a 100-feet reservation, and that some of these reservations have been cancelled and purchased? They have been purchased.

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Hon. J. N. Brunker, M.P.

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284. What proportion of the 1,000 feet has been purchased as a frontage right? I cannot tell you from memory. I know that a great many rescissions have been made. I do not see why the people who bought land in the locality should be treated differently from those who reside in other parts of the colony. If they are to contribute to the improvements that are to be made in the harbour I suppose it will be done by a rate the same as it is in other ports.
285. The improvements will be specifically for the benefit of the owners of the frontages? I think they would be for the public benefit.
286. More so to these persons than to any one else? Yes.
287. We are told by the Mayor of Wickham that it will increase the value of these frontages three-fold if the improvements are carried out? It will increase the value.
288. Do you think it will be a wise course to pursue? Yes; you cannot contribute to individual wealth without conferring general benefits.
289. If this dredging would turn land that is worth £15,000 into land that is worth £60,000, do not you think it would be worth while for the Government to buy it first and make the improvements afterwards? I would not like to be a party to the speculation.
290. Do you think it is necessary, for the purpose of making these people's water-frontages very valuable, to go immediately to the expense of that excavation? I think it will improve the whole locality very much. If the Government intend to deepen this channel so far, I do not see why it should not be done a little farther.
291. The demand for it is made on the part of the holders of the water-frontages. Do you think we should spend an extra £10,000 on a swing-bridge, and go to the expense of the excavation? I do not think the cost would be very great. It is simply a matter of dredging.
292. The Mayor of Wickham thought it would be an advantage to remove the Wickham Bridge altogether and place it by the side of the railway bridge, and extend the water-frontage on both sides. Do you agree with that? I do not think it is necessary.
293. *Mr. Trickett.*] Suppose a bridge that would answer the purposes of the traffic could be constructed for £3,000, would that be sufficient? If a bridge can be constructed that will meet the present requirements of the traffic the smaller cost the better.
294. If the engineer (Mr. Hickson) has stated on oath that a bridge as large as, or larger than the present bridge can be built for £3,000, would not that be sufficient for the present? My idea is that if a bridge is to be built it is a waste of money to erect a bridge for £3,000. I think the present structure might be made available for all purposes until a new bridge is completed.
295. Mr. Hickson has stated on oath that it would cost as much to repair the old bridge as to build a temporary bridge, the life of which would be fifteen years? My idea is that if they are to have a bridge they ought to have a permanent one erected at once. £1,000, I suppose, would make the present bridge suitable for all requirements until the new bridge is completed.
296. A costly bridge would take, I suppose, three years to construct, and in the meanwhile something must be done to keep up the present means of communication? I should imagine that the present bridge will do that, if repaired.
297. I understand your views are that a costly structure should be built to work in with the reclamation works? I say a structure should be erected equal to the importance of the place, and such as they ought to have.
298. That would be a bridge, I suppose, sufficient to meet all the traffic between the mainland and the island? Yes.
299. Have you considered this question of the bridge in connection with the reclamation works that are now actually going on there? Yes. I don't think the reclamation works should delay the construction of the bridge. I think Mr. Darley would agree with me on that point. I know he said some years ago that if they intended to erect a permanent bridge, or such a bridge as they should have, they might have temporary piers until this channel was cut, even in erecting a new bridge.
300. You clearly think that, if the bridge is to be a permanent structure, there should be a swing leading into Throsby's Creek? That would depend on its height to a very considerable extent. The channel should be cleared.
301. Would not improving the entrance to Throsby's Creek be largely for the benefit of private holders? It would be for the benefit of the country generally.
302. And for the benefit of these people in particular? Yes.
303. Do you not think that the outer basin below the bridge would give sufficient wharfage accommodation to Newcastle for many years to come? I think it will for some years at any rate. They have very large wharfage accommodation already—2 miles, I think. During last year the tonnage increased very considerably. The outwards showed an increase of something like half a million tons of coal.
304. I suppose you do not think it desirable to divert the traffic round by Wickham whilst the new bridge is being constructed? Certainly not.
305. So that if an expensive bridge is to be built, and it will occupy three years, you are of opinion that something must be done to keep up the present means of communication? I think the present traffic ought to be maintained.
306. *Mr. Hurley.*] You are aware that the Commissioners have promised a sum of £17,000 conditionally on the permanent and high-level structure being erected? I heard so.
307. Do you think the people should be subject to the inconvenience of having their traffic diverted *vid* Wickham for two and a half years while a bridge is being erected? I should not like to be the Minister who suggested it.
308. Considering that they have temporary accommodation which would suffice probably for foot passengers and light traffic during the construction of a more permanent structure, do you not think they would be acting in the best interests of all concerned if they were to consent to be put to that inconvenience, so that they might secure the more permanent structure? I have said already my opinion is that the present structure could be utilized for all purposes until the main structure was completed. Knowing how these matters are generally carried on, I am clearly of opinion that if this new temporary bridge is erected, there is no probability of the other bridge being erected for very many years. It is absolutely necessary that it should be erected at once. Apart from that, I think it would be an unnecessary expenditure to erect a temporary bridge. I suppose that, in three months, the present bridge could be made just as strong as a new bridge.

309.

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309. Taking into consideration the probability of the number of railway lines being increased, and the consequent inconvenience to passengers going over a low-level crossing, you recommend that in the interests of the public safety a high-level bridge should be erected in preference to the proposed temporary bridge? I think it will be freer from danger.
310. Knowing the extent of the trade of Newcastle, and knowing that the proposed reclamation will give seven additional cranes, thereby increasing the wharfage crane accommodation 50 per cent., it is not likely that this inner basin will be required for the next ten or twenty years? Not to any great depth. While these improvements are being carried out, I think, as a point of economy, it will be better for the Government to deepen this channel. I think it will be just as well that it should be deepened to a certain point—that is to that point where they might obtain a water traffic. I think sufficient water traffic could be made from the end of the reclamation into the deep water of the harbour—it would be of great service and benefit to the public. Dr. Garran has suggested that there may be a large timber traffic above the railway crossing on to Bullock Island. There are other manufactures springing up about Tighe's Hill, and the whole of the traffic there might be carried by water. There is a large extent of land occupied by the Railway Department, by large soap and candle works, and by other manufactories.
311. You will admit that Bullock Island and Newcastle are well supplied with train accommodation at the present time? I think they have the best facilities for shipping coal that exist in any part of the world.
312. With seven additional cranes there will be ample accommodation, even if the trade were to increase 50 per cent.? Yes.
313. That amount of accommodation being given in the outer basin, probably the inner basin will not be required for ten or twenty years to come? They will not require the same facilities there.
314. That being so, they will not require a swing in that bridge, which, by the way, will cost £10,000 extra? The point to be considered is whether they should not look to the future, and whether, if eventually that channel has to be deepened, an opening should not be left in the bridge.
315. It is in anticipation of the wants of the future that you recommend a high-level bridge in preference to a temporary structure? I recommend a high-level bridge for the purpose of freeing the people from danger.
316. Have you considered the probability of the extreme end of Bullock Island being connected by tramway with Blane-street, in the city? No.
317. Would not a moment's consideration of that point convince you that a temporary bridge would not carry a tramway. Would it not be inconvenient in every sense to have a low-level crossing? Yes.
318. Therefore that fact alone almost necessitates the erection of a high-level bridge? If it is suggested to have a tramway there.
319. You know that during the last three years the population of Bullock Island has increased marvellously? I know I was offered land there over and over again for £8 an acre, and that I have sold the same land for £3,000 an acre.
320. So high values are placed on land there, and land is to be reclaimed there by the Government? Yes.
321. There is everything there to warrant the construction of a more costly structure? Yes.
322. *Mr. O'Sullivan.*] From your evidence I gather that you are in favour of the construction of a bridge at once, irrespective of the reclamation works and the channel to Wickham? I think it ought to be proceeded with.
323. *Chairman.*] Has not the growth of population on Bullock Island been extraordinary? Yes.
324. And the value of land has increased there very much? Yes. I was offered land there over and over again within the last thirty years for £8 an acre, and I sold the same land for over £3,000 an acre.
325. You think there is plenty of room there for further expansion? Yes.
326. And the effect of this reclamation will be to provide greater space, because a large area of the land is low-lying, and might be made available for building? Yes.
327. Will the proposed bridge give them better facilities than the existing bridge—is it a better site? The site is a very good one.
328. You are of opinion that the present population and the present value of the place would justify the erection of a permanent bridge in preference to a temporary structure? Unquestionably.
329. To say nothing of the prospective increase in population and in the value of property? Unquestionably.

TUESDAY, 18 *MARCH*, 1890.

Present:—

The HONORABLE ANDREW GARRAN (TEMPORARY CHAIRMAN).

The Hon. FREDERICK THOMAS HUMPHERY.	HENRY COPELAND, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	JAMES EBENEZER TONKIN, Esq.
The Hon. GEORGE HENRY COX.	WILLIAM SPRINGTHORPE DOWEL, Esq.
JACOB GARRARD, Esq.	EDWARD WILLIAM O'SULLIVAN, Esq.

JOHN HURLEY, Esq.

The Committee further considered the proposed Bridge to connect Bullock Island with the mainland at Newcastle.

Alexander Brown, Esq., M.P., sworn, and examined:—

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330. *Temporary Chairman.*] Are you one of the Members for Newcastle? I am.
331. Are you aware of the tenor of the evidence given at Newcastle on this proposal? I am.
332. Have you now any statement to make to the Committee in the matter? The first portion of my statement will be, as far as it can be, in direct contravention of the evidence of the Mayor of Newcastle, as voicing the wishes of the citizens of Newcastle. I say the citizens are unanimously of opinion that the bridge should be constructed; that the delay is unsatisfactory as far as they are concerned; that I see no reason, as a business-man, and as connected with the business operations of the city, why the work should not be proceeded with; that, if a temporary structure is necessary, the existing bridge can be repaired for something like £1,000, or for even less, so as to serve all the traffic; that the Government lands in the immediate vicinity are large and valuable; that the volume of traffic is very considerable betwen the two places,

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places, and that a permanent structure must be erected there, and on the low-level principle. I do not believe that a high-level bridge can be constructed there, because the approaches absolutely prevent it. I believe that the approaches to the bridge can be better constructed now than they could after the dredging; that the dredging operations which must necessarily take place to provide wharf accommodation could be better done now than later on. It is very much easier to construct abutments and buttresses, and all that, on dry land than to sink cylinders. I believe in the interest of the city and of the traffic a bridge ought to be constructed.

333. Are you aware that some of your statements are in direct contravention of the evidence of the engineers? I am aware of that, and it does seem extraordinary to me that at this particular time—after the estimates for the construction of the bridge had been prepared, and the proposal has been submitted to Parliament and referred to this Committee for consideration—at almost the last stage, these reasons should be alleged by the Government officers. The knowledge which they possess was just as much in their possession a few months ago before the estimates were prepared as it is now, and it seems most extraordinary that the time of the public, of yourselves, and of the whole of us should be wasted in this manner. If it was not necessary to construct the bridge five months ago, these gentlemen knew it. Why was it submitted to Parliament, and why does it take the form it has taken? I say that the work is a necessary one, although my opinion may be in contravention of the engineers'. Of course it must be borne in mind that the present head of the Roads Department is not the gentleman who prepared the estimates for the bridge; but his predecessor thought that the bridge was necessary, or else the item would never have appeared in the estimates. My individual opinion is, that the cost of the bridge would be amply repaid by the increased value it would give to the lands in the immediate vicinity, the bulk of which belong to the Government. I have no hesitation in saying that if the port were under a Harbour Trust, and this matter came within the scope of our functions, we should not scruple about building the bridge, if the land to be reclaimed were part of the result.

334. Differing as you say you do from the engineers, do you think your opinion on an engineering point is more to be trusted than that of the engineers themselves? I cannot say that. I should be very sorry, as a civilian, to set my opinion up in opposition to the engineers; it would be unwise on my part to do so. I only say that the circumstances incidental to it are somewhat extraordinary.

335. You say the bridge could be better built now than after the proposed reclamation has been made, but the engineers say that it can be better built then than now—is your opinion better than theirs? On that point I am prepared to put my opinion against theirs.

336. You are aware that the reclamation of Newcastle shore is much desired by the Railway Commissioners? Yes.

337. As a Newcastle man, you admit that they want more room for sidings? Yes.

338. And that it will be a great advantage to Newcastle if they can sell the frontages they now occupy to the main street, and push their works more to the north, so as to give a larger shop-frontage to the main street, and a larger revenue to the municipality? Yes.

339. Therefore you quite concur in that piece of reclaimed land being handed over to the Commissioners? It is partly reclaimed—water or not, it is the property of the Railway Commissioners.

340. The Minister for Lands says not? I am speaking of the piece which is partly reclaimed, alongside Honeysuckle Point.

341. If you turn to the map on the easel you will see the piece which it is proposed to reclaim is situated to the east and west of the bridge? Yes.

342. The bridge lines with the road—crosses it about in the middle? Yes.

343. The whole of that reclaimed portion it is intended to use for sidings and other purposes connected with the terminal station at Newcastle? Yes.

344. And as a business-man you know that if the line of sidings—which we are told will consist perhaps of seven or eight parallel rows of rails—were obstructed by the road crossing on the level, either the use of the sidings or the use of the road must frequently be stopped. The evidence at Bullock Island and the evidence at Newcastle was all against the interruption, and on both sides of the water all the evidence was in favour of a high-level bridge. I understand you to condemn a high-level bridge? I say for railway purposes it is impossible to construct a high-level bridge.

345. How do you mean "for railway purposes"? I say the abutments of the railway-bridge cannot possibly be in Hunter-street, it must be carried into another part of the city, because the configuration of the country will not allow it to be done.

346. They propose to make the new road in line with Union-street, and then rise at practical gradients, and cross on girders, and descend to the existing causeway to the island—is that impracticable? I do not think it is.

347. They are going to sell some allotments facing the street on the northern side, which will have a depth of perhaps 100 feet. The whole of that will be available for the rise from Hunter-street to the level part of the bridge, and the engineers say they can make a practical grade for traffic, starting from the level of Hunter-street, reaching the level over the line, and descending near to the causeway—are you prepared to set your opinion against theirs? No.

348. I understand you did? Not on that point. I was speaking on the supposition that it remains where it is.

349. You began by saying that it must be a level crossing? As it is now situated.

350. You are arguing against a plan which you are not acquainted with? I am not.

351. *Mr. Hurley.*] You must admit that you were labouring under a mistake? I say that unless some fresh arrangements are made in connection with the moving of the street on the other side it is impossible to make a high-level bridge there.

352. You have stated that since you have said you were against a low-level bridge? I say a low-level bridge must be provided as it stands at present.

353. *Mr. Trickett.*] You are talking in connection with Blane-street? Yes.

354. *Temporary Chairman.*] A certain plan is before us, you complain, and when it is explained you say you did not understand what the plan was, and you thought the line of approach was to follow exactly the existing line of road—that was your impression? It is not.

355. Do you now entertain any objection to the proposed plan? I do not.

356. You withdraw your objection? If the engineers can construct the high-level bridge and move the site

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site of the street so as to make it easy of access, it is certainly better in the interests of all parties concerned.
357. That is what they tell us they can do. You have no objection to a high-level bridge now. As your objection on that point is removed, what other objections have you? I say that there is nothing to prevent the bridge from being proceeded with at once, either on a high or a low level.
358. The engineers tell us that, although it can be done at once, it can be done more advantageously if the reclamations were made first—do you dispute that opinion? No.
359. Then, pending the delay, they propose to make a better bridge than the existing one, and within six months from the time of getting orders, so that the existing bad communication will only be wanted pending the construction of the better bridge. Have you any objection to that? I should prefer the old bridge being repaired, because once we get a temporary bridge the other bridge will be simply relegated to limbo—we shall never get a permament bridge.
360. That seems to be the opinion of the people of Newcastle? That is my conviction.
361. If you know that the Railway Commissioners are exceedingly anxious to have this reclaimed space, and will use all their influence to urge on the reclamation, do you really think there is any danger? I do, most assuredly. As far as my experience of Newcastle is concerned, in its dealings the central Government has been exceedingly slow and very uncertain.
362. Would not a bridge such as they propose to build give you 50 per cent. more roadway than the present bridge, and anwer the immediate purposes of the island now? I should prefer to see the present bridge repaired to getting a moderately permanent structure, because once we get a bridge of that sort it will have to do for the next twenty years.
363. I ask you if a bridge that would give you 50 per cent. more roadway than the present bridge does will answer the immediate requirements of the island? I do not think it would.
364. If the temporary bridge were made half as broad again as the present bridge, that would be wide enough? My opinion is that it would stop at that.
365. Suppose it did, what objection could there be? I think both the works might be going on together.
366. If the new bridge were sufficient for the next five years for the wants of the island, where is the reason for spending more? I should prefer to be without it, because I think the character of the two places warrants something better than a temporary bridge.
367. What I ask is, would not a bridge such as it is proposed to make be sufficient for the traffic for the next three, four, or five years? I do not think so.
368. We had accounts of the quantity of traffic going over, and the evidnce was to the effect that there was no traffic which would not be amply accommodated by a bridge of that sort? I do not think it would.
369. That is merely an opinion? That is all.
370. You would not set your opinion against the statistics of traffic? No.
371. Is it not a fact that iron is particularly dear just now? I daresay it is—the market is high.
372. Suppose we were to order the ironwork of the bridge, and it really is not wanted for two years, would we not be spending money unnecessarily? I do not know that you would. I do not know that you have any assurance that the present value will not obtain for some time to come.
373. It is certain that the price is unusually high now? It was unusually low some time ago, and if the colliery strike in Staffordshire continues for some time it will make a further difference in the value.
374. Your contention is that the new bridge should be made at once, whether it is wanted for railway purposes or for the convenienee of the island? I say it is wanted for the ordinary traffic between the two places.
375. How many houses are there on Bullock Island? Some hundreds I should say.
376. We were told 400. Do you think that if a bridge costing £3,000 would meet the wants of these 400 houses, a bridge costing £33,000 is immediately neeessary? I do think so. I think that as far as your 400 houses are concerned it is a low basis on which to put the connection between two large centres of increasing importance. Newcastle is rapidly rising.
377. Yon are aware that it is proposed within five years to have this larger bridge? I do not believe it.
378. You are simply putting your belief against the positive statement of the officers? I do not believe it will be constructed, once the temporary bridge is put up.
379. Do you believe that the reclamations will not be made? I do not.
380. You believe that the railway people will not get their sidings at all? I do not believe the reclamations will be made.
381. Your attendance is simply to plead against delay? Yes; the thing is urgent, and it should be done at once.
382. *Mr. Trickett.*] You say that the reclamation will not be done;—are you aware that the work of reclamation is now going on in the basin? They have a sand-punt there, but I hope we shall soon have a Harbour Trust to deal with the reclamation. I do not suppose it will be done for some years to come—not with the Government stroke.
383. Have you considered that if this expensive bridge were authorized it would take three years to construct—that is the evidence given by the engineers? They are extraordinary engineers who would take three years to construct that bridge. It is time they were removed from the Government service.
384. Suppose it were to take from two and a half to three years, are you, as one of the representatives of Newcastle, willing that the people should put up during that time with the present rickety bridge? If sufficiently repaired, so as to make it available for traffic. I may tell you that Mr. Thomas Brooks, a gentleman largely connected with bridge-work, is prepared to undertake to put the existing bridge in order for £1,000, and to guarantee that it will carry a reasonable amount of traffic for the next two or three years.
385. Will you state that in the face of the evidence of all the officials that it will be better to build a new bridge than to repair the old one? I state that in the face of their evidence.
386. Until the reclamation works are carried out, this bridge, if constructed, would really be in a great measure a bridge over dry land? No; the larger portion is water space. Our water space at Newcastle is exceedingly limited, and we do not want to make dry land.
387. A large portion would be over dry land? Yes.
388. Do you think there should be a swing-opening in the bridge? I do, so as to enable the traffic to pass up and down on that side.

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389. Up to Throsby's Creek? Up in that direction, towards Wickham.
390. Is it not nearly all private land at Throsby's Creek? A portion of it is.
391. We have had evidence to the effect that the greater portion of it is private property, and that it is all shallow? It will have to be dredged out. At present all the timber business is being transferred there; it will be the future shipping-place for timber. At present the water accommodation is so limited that they will not allow people to put their timber on the wharves—they have to raft it up there, bad as it is.
392. Where does Mr. Thomas Brooks live? In Newcastle.
393. He says he could make the present bridge a good substantial one for £1,000? He says so. He builds wharves for the Government frequently.
394. *Mr. O'Sullivan.*] It is the opinion of the Roads and Rivers Department that the present bridge cannot be fitted up to carry the traffic? I beg respectfully to differ from them.
395. Have you heard that it is also their opinion that it would be cheaper to erect a temporary bridge? I have not.
396. Have you heard that it is their opinion that this permanent bridge can very well wait for five years, in order that the reclamation works may be carried out? I have read it in the newspapers.
397. Would it be to the interests of the country to construct an iron bridge at a cost of at least £50,000 when the officers are of opinion that it will not be required for five years? I say you are spending £5,000 on a bridge unnecessarily, and that you may as well go on with the permanent structure at once.
398. The interest on £50,000 for five years at 4 per cent. would be £10,000, and if a temporary bridge costing only £3,000 will carry the ordinary traffic, will it not be to the interests of the State to have a temporary bridge put up for that period? It might be, but as far as Newcastle is concerned it is not to the interests of Newcastle.
399. The people of Newcastle appear to have an idea that the temporary bridge will be too good and last too long? That's true.
400. *Mr. Hurley.*] Do you think the people of Newcastle and Bullock Island would consent to go round by Cowper-street in preference to having a temporary bridge, so that they might secure a permanent structure? I don't think so. I think the citizens would prefer the erection of a bridge at once.
401. Suppose the present bridge could be repaired for £1,000, do you think, with regard to the heavier class of traffic, the people of Bullock Island and Newcastle would consent to travel the additional mile and a half by Cowper-street in order to secure a more permanent structure? I do.
402. Thinking that it will take only two and a half years to put up a permanent structure, you believe they are quite willing to wait until it can be done? I think so.
403. You have watched the growth of population on Bullock Island during the last few years? Yes.
404. It is extending very rapidly towards Newcastle? Yes.
405. There is sufficient Crown land on the island to accommodate a very large population? Yes.
406. The population of the island, judging by the experience of the past few years, is likely to increase? Very rapidly.
407. Seeing that a large population is likely to be located there, have you considered the necessity of providing tram-service communication to the city? I think there ought to be a tram service later on.
408. Suppose the temporary bridge were made, could a tramway be carried over that structure to Newcastle? No.
409. In your opinion it would be necessary to have an overhead bridge of a permanent character to carry the tramway? I think so.
410. Are you aware that the Railway Commissioners have offered to contribute £17,000, providing the Government will agree to construct a high-level bridge? Yes, through the newspapers.
411. The people of Newcastle, and you as one of their representatives, were led to believe that the Railway Department are in accord with the demands you are making? I think so.
412. Besides being a great convenience to all those interested in the shipping of coal, and the carrying of goods on the railway, would not a high-level bridge be a preventative against the loss of life which would probably occur with an increased number of rails, if it were a low-level crossing? I think so.
413. Therefore the construction of a high-level bridge is in every way very much desired, to meet the convenience of the general public, and to afford protection to life? I think so.
414. Knowing the rapid growth of Newcastle and Bullock Island, and seeing that there is no other outlet but Bullock Island for the suburban population, you consider, looking ahead twenty years, that a permanent structure is actually necessary? Looking ahead only ten years, I say it is very necessary that the structure should be proceeded with.
415. Have you a knowledge of the value of land on the island? I have.
416. Have you heard of the evidence given here by the Minister for Lands on that point? I have.
417. Can you ratify his statement? I do, without any hesitation.
418. There will be a large area of land reclaimed by the proposed works? A very large area of very valuable land.
419. And when these reclamations are completed there will be no difficulty in finding purchasers at good prices? None whatever. I will undertake to build the bridge if the Government will give me the reclaimed land.
420. Do you know the area of land that will be reclaimed? About 60 or 70 acres, I believe.
421. What value per acre do you put upon the land? It would be very hard to say what the value would be with such a frontage. It would be very valuable—it would be worth some thousands and thousands of pounds.
422. You believe that the proceeds of the land would defray the cost of a high-level bridge? Twice over, at any rate.
423. Do you anticipate that the Railway Commissioners are likely to give that £17,000, in the event of the low-level structure being carried out? I do not think so, because they would get no advantages unless they had a high-level bridge.
424. Therefore the construction of a high-level bridge would not only be a great convenience to the people of the island, but would also be of great benefit and advantage to the Railway Commissioners? Yes.
425. *Mr. Dowel.*] What are your reasons for stating that the construction of an iron bridge would increase the value of the Crown lands? It would give means of access to these lands. A valuable approach of this character must increase their value very considerably.

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A. Brown, Esq., M.P. 18 Mar., 1890.

426. Can you say, of your own knowledge, if there is any considerable demand for land on Bullock Island? Yes, land will always sell there. Allotments that you could have bought there for almost a few pounds a few years ago are worth £1,200 and £1,500 to-day. Within the last few years the Government themselves have sold land there at £10, and bought it back at £1,500.
427. Do you think it desirable that the Government should reclaim this land at the island? I do.
428. Having in view the necessity of constructing a bridge, do you think a temporary structure would answer the purpose? No.
429. For what reason? A temporary structure is never satisfactory, with all the copra and other things we have in that water.
430. Would a composite structure answer the purpose—iron cylinders, with a timber superstructure? It might; but the question is, whether you would not be better off with an iron bridge than with one of wood, which you would have to repair from time to time, for the white ant is very bad with us.
431. At any rate you are of opinion that the bridge should be erected forthwith, in spite of the evidence which has been given by the departmental officers—that it would cost more to repair the existing bridge than to construct a new one? I am.

James Fletcher, Esq., M.P., sworn, and examined:—

J. Fletcher, Esq., M.P. 18 Mar., 1890.

432. *Temporary Chairman.*] Are you one of the Members for Newcastle? I am.
433. *Mr. O'Sullivan.*] Will you be kind enough to make a statement to the Committee of your views with regard to the construction of a bridge to Carrington? I wish to state that in my opinion the construction of that bridge is absolutely necessary, and that it should be proceeded with as early as possible.
434. Are you aware that the Mayor of Newcastle holds a different opinion? Yes; but I do not know that he is very competent to give an opinion about the construction of bridges. I should not take him as an authority on bridge construction.
435. Was he not authorized to voice the opinion of the citizens of Newcastle? Not that I am aware of. At all events the people of Newcastle have requested me to give evidence before this Committee in the opposite direction.
436. You are aware that the cost of this bridge, if it is a high-level one, will be £50,000, and that the Department are of opinion that it might wait for about five years until the reclamation works are carried out? I think some of the Department are.
437. The interest on £50,000 at 4 per cent. would amount to £10,000 in five years;—would this Committee be justified in recommending that expenditure when, according to the opinion of the Department, a temporary bridge costing £3,000 would carry the traffic for that time? Yes, because I am not in harmony with the statement that it is going to take five years to do the reclamation works. The area of land which may be sold would bring four times the cost of the bridge, and the interest on that sum should be considered as a set off against the interest on the money laid out on the bridge. The reclaimed land will realize at least four times the value of the bridge. If it is fair on the one side to consider the amount of money which the Government will lose as interest, how much fairer is it to consider the loss they will experience if the land is not sold.
438. You think, then, that one matter would counterbalance the other? Much more.
439. Do you think the present bridge can be put in good working order? I think that if it were repaired—in fact, one tradesman in Newcastle said to me, "I will make it safe for £1,000"—it can be made to carry the traffic for a time at an expenditure of £1,000.
440. Would it then carry the heavy traffic? It would carry the traffic which is likely to pass over it until the new bridge is erected.
441. For how many years? I should think two or three years. I do not think it would take longer than two years to erect the bridge.
442. Is there not heavy traffic from Newcastle to the ironworks and shipping at Bullock Island? There is a heavy traffic.
443. Could that be accommodated by the present bridge if it were repaired? I think it could until the new bridge is erected, if it is erected within a reasonable time.
444. You think then that the importance of the traffic between Bullock Island and Newcastle justifies the immediate erection of a high-level bridge? I say, positively, in my opinion the work can be done very much cheaper before the dredging is done than it can be done afterwards, as you will have a surface upon which to lay your materials, which will save the cost—£1,000 or £1,500—of putting up staging. I suppose the foundations will consist of cast-iron cylinders.
445. Is there not a dread in the minds of a number of the Newcastle people that the temporary bridge is to be too good a structure, and will last too long? I do not know whether there is any such fear as that. I think myself that it would be a positive waste of public money, as long as the old bridge could be repaired to carry on the traffic for a couple of years, by which time a new bridge could be erected.
446. Is it important that these reclamation works should be carried out? It is.
447. Is the demand for water-frontages in Newcastle sufficiently strong to justify that work? I think that if the land were reclaimed the Government would readily sell it for £2,000 an acre, but as it is now it is not worth £10 an acre.
448. *Mr. Hurley.*] Looking at the question of the temporary bridge, and looking at the service which they have now across Cowper-street from Wickham, do you, as one of their representatives, think that the people of Newcastle would be willing to put up with the present structure, with some slight improvements of course, in preference to being subjected to a mile and a half additional haulage, in order to secure the more permanent structure? I think they would be prepared to put up with the inconvenience, whatever it may be, for a time, so long as they know that a permanent structure has been commenced, and with an intention to carry it out.
449. You are aware that the Railway Department anticipate extending their lines northward, in order to remove the bend from Wickham into Newcastle? I have heard that.
450. Have you heard that they intend to contribute £17,000 towards the cost of the construction of the more permanent bridge? I heard that also. When I know that they will get about 40 or 50 acres of very valuable land I am not surprised at them giving it.

451.

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J. Fletcher, Esq., M.P.
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451. Will not the people of Newcastle benefit in a very great measure by such extension? They will get a corresponding benefit, but the Commissioners will get the lion's share.
452. Will not the municipality of Newcastle benefit by bringing into the market a lot of land, upon which buildings will be erected, and from which taxes will be received? No doubt the municipalities would benefit proportionately from every acre of land that is made taxable.
453. In view of the increased number of railway lines that are likely to be laid down, will not a low-level crossing be a great inconvenience as well as a danger to the travelling public? I am decidedly in favour of a high-level bridge, provided that the grades are of such a character that traffic can pass up them safely, but if they make steep grades merely to get a high-level bridge I should certainly condemn it.
454. If they can construct a high-level bridge upon which they can carry a tramway, will not that satisfy all the demands of the people? No. We must never stop the vehicular traffic.
455. The construction of a tramway will not interfere with the vehicular traffic? The present road is too narrow altogether for vehicular and tram traffic to travel upon, unless they make it wider.
456. You think that if an easy grade were given to a more permanent structure it would give satisfaction? If they make very steep grades the people of Newcastle will not like it.
457. In a high-level permanent bridge, do you think it will be necessary to have a swing? I think so. I think we should give the people the advantage of a channel, so that wharves may be constructed alongside the channel.
458. I suppose you admit that the port is fairly well supplied with steam-cranes for the export of coal? At the present moment, unfortunately, it is, but when the demand is great we find that large vessels have to wait a considerable time before they can get under the cranes, while at the same time collieries are idle, waiting for trade.
459. Seeing that the Government are now reclaiming this inner basin, and are going to give the people of Newcastle a third more wharf accommodation than they already have, will not that serve them for many years to come? A third more accommodation, and taking advantage of the whole length of the dyke, will no doubt serve for a time, but the rapid growth of the coal trade swallows up a great deal of the facilities, and, more than that, it wants a great improvement made in the harbour to take advantage of the cranes which are now being erected.
460. Notwithstanding that you are going to get seven additional cranes you believe it is necessary to open up with a swing bridge Throsby's Creek for the future supply of coal? I do, indeed.
461. You have watched the growth of Newcastle? I have known it for thirty-seven years.
462. Have you noticed the rapid growth of the population on Bullock Island during the last five years? I have.
463. Has not that been built up chiefly within the last five years? Not within the last five years. I think the first person went there about 1870 or 1872, but the last ten years have added very much to the growth of the buildings on the island.
464. Would you say more than 50 per cent.? I would say 400 or 500 per cent. I can remember when the whole of the island could be bought for less than £20 an acre.
465. Are you of opinion that the population will move up to that portion of the island which is now unoccupied—the north-west? I do. I think the Government will be able to dispose of that land at handsome prices.
466. Have you any idea as to how much land would be reclaimed? I think it would be over 100 acres.
467. You believe that the whole of that reclaimed land will realize on an average £2,000 an acre? I think it will, especially if they give facilities in the way of wharves, which I understand it is the intention of the Government to do.
468. *Mr. Copeland.*] Do you know how many houses there are on Bullock Island? No.
469. It is reported, I believe, there are some 400 houses there—how long do you think the old bridge would last, suppose £1,000 were expended in repairing it? I think it would last two years—sufficiently long until the new bridge was erected.
470. It would be of no further use then? I do not think so, then.
471. The country would be paying £500 a year for providing accommodation for Bullock Island? I do not look upon it in that light. I look upon it as a work of necessity. The bridge is fit to tumble down now, and I only look upon the repairs that will be made to it as a means to tide over the period which will elapse before the permanent bridge is erected.
472. But £1,000 would be expended in giving accommodation for two years? I think it would.
473. If a new bridge—a wooden structure, which is termed a temporary bridge—can be constructed for £3,000 that would last for fifteen years, the country would be paying £200 a year to give accommodation; do you not think the country would be more justified in reducing the cost of that accommodation to £200 than in spending £500 a year? If you look at it merely from a bridge standpoint your calculation is correct; but the people of Newcastle are not going to be satisfied for fifteen years without getting a bridge.
474. Would there be anything to prevent Newcastle growing, or traffic from taking place, if the bridge were made of wood instead of iron? No; they could travel as well over a wooden bridge; but you would not give people the same facilities to go there and make property valuable. If you look ahead, in all probability, when the Government get short of money they will be selling that land which is to be reclaimed at its present value, instead of letting the country realize the full benefit when the improvements are effected.
475. Do not you think the land is likely to be of more value after they get it level? I do not think so, because in the meantime they may drive population in another direction altogether.
476. How can that happen if they have accommodation for all that traffic over a wooden bridge? They will have accommodation for traffic over the temporary bridge, but what is really wanted to give that property a value is to cut a fresh channel where wharves can be made. The accommodation itself will give an additional value to the land, and induce people to go there.
477. You are speaking of Throsby Creek? Yes.
478. The bulk of the land on the Newcastle side is private property? Yes. Where the channel is being cut now there will be a very large area of land reclaimed which will be the property of the Government. In fact there is no definite boundary, scarcely, now. At a place where you can swim a boat, I can remember well when it was high and dry. This is simply because the water spreads all over. When a little channel is

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is cut the water washes away the sand and makes a channel, and by defining it a great area of land, which is now claimed by private individuals, but which in many cases does not belong to them, will become the property of the Government.

479. Would a wooden bridge in any way impede the traffic? Taking the cost of the present bridge as a guide to the life of the wooden bridge which is to be erected, it would not last very long.

480. How long is it since the present bridge was erected? I cannot exactly say, but I remember it being erected. It has been dangerous for a long time, and I have brought the matter under the notice of various Ministers.

481. I suppose you are aware that the life of a wooden bridge is reckoned at fifteen years, and that the majority of our wooden bridges have already lasted much longer than that period? Yes. This bridge has had a much longer life than fifteen years, although it has been frequently repaired.

482. Do you know of any stop to traffic, prevention of increase of population, prevention of despatch of coal, or any other disadvantage which would accrue from having a wooden instead of an iron bridge, so long as the wooden bridge was wide, and solid, and strong enough to carry all the necessary traffic? I do not think that would prevent people from living at Bullock Island. I do not think a ton of coal less would be shipped now, but I say, considering the life of an iron and the life of a wooden bridge, it would be a wilful waste to erect a wooden bridge in a place like that, when it is intended to ultimately erect an iron one.

483. *Mr. Trickett.*] During the erection of this expensive structure, if it is to be erected, there must be some means of communication between Newcastle and Bullock Island? Certainly.

484. It is admitted that the present bridge is in a dangerous state? I say it can be made safe enough until the new bridge is erected, at an outlay of £1,000 or £1,500.

485. Do you set up that opinion even if the officers of the Department have stated that such is not the case, and that to repair the old bridge would mean really a new bridge—lock, stock, and barrel? I set up that opinion, not exactly in opposition to the opinion of the officers of the Department, but on the fact that gentlemen are prepared to take the work at that price and do it. That is a better proof than calculation.

486. Do you mind giving the names of these persons? Mr. Thomas Brooks, of Newcastle, has told me that he will make the bridge perfectly safe, to last two years, for less than £1,500.

487. During the time the bridge is being repaired there must be, I suppose, a stoppage to traffic? I suppose they will do the work with as little inconvenience as possible. It is no unusual thing to see a railway-bridge being repaired and traffic at the same time going on. I do not see why the traffic on this bridge should not be carried on without very much inconvenience to the public whilst the repairs are being made.

488. Taking it for granted that the expensive structure is to be ultimately carried out, you would sooner have the old bridge repaired than a new bridge erected? I would sooner have the old bridge repaired, provided the Department are prepared to go on at once with the erection of the new bridge. I say, notwithstanding what the Department may say to the contrary, that they will put the bridge up at a very much less cost before they dredge the channel than they will do afterwards.

489. *Mr. Humphery.*] I think you said that if a high-level bridge were erected the reclaimed land would be enormously valuable? I think so.

490. Could not the channel be cut and the reclaimed land be realized at full prices without a high-level bridge being built? But it would be necessary to put a portion of the stuff taken from the new channel to fill up the old one in the reclamation works. You cannot close the old one until the new one is cut.

491. That is what you mean by saying the high-level bridge should be built before the reclaimed land should be realized? I think so.

492. *Mr. Tonkin.*] Has there been any public meeting held in Newcastle to condemn the Mayor for the evidence which he gave before this Committee? Well, there is a universal difference from the Mayor's opinion.

493. There has been no public meeting held? There has been no public meeting held that I am aware of, beyond the fact that a majority of the people think differently from the Mayor on this matter.

494. The Mayor, of course, is a representative of the citizens? He is.

495. If the citizens were dissatisfied with his evidence, would they not have taken the usual course if they had called a public meeting and condemned his action? I think it is premature. I think they are relying more upon the Public Works Committee than upon anything which Mr. Christie said.

496. They know very well that the Committee goes according to the evidence? No doubt they do, but I do not think they paid very much attention to Mr. Christie's evidence.

497. He, as the representative of the citizens, is supposed to voice the opinion of the majority of the citizens, but if it is at variance with the opinions of the citizens there should be some demonstration, but none has taken place? Not that I am aware of, nor do I think the citizens of Newcastle view it in that light. I think they only took his evidence for what it was worth, and certainly not as representing the voice or the wish of the people of Newcastle.

498. But the mayor of a city is the mouthpiece of the citizens? You know there may be mayors and mayors.

499. *Mr. Dowel.*] Are you aware that it has been reported by the officers of the Department that the present bridge is unsafe? I have known that for a long time.

500. Are you aware that the Department have stated that it would be much better to build a temporary bridge at a cost of £3,000 than to repair the old bridge? I am not. I believe they recommend the erection of a temporary bridge in preference to repairing the old bridge; but, notwithstanding the very high estimate I hold of the gentleman at the head of the Roads Department—and I look upon him as second to none in the Government service—I beg to differ with him.

501. If it is their opinion that it will cost more money to repair the present bridge than to erect the temporary bridge, you would not endorse it? Certainly not, for the reasons I have given. If Mr. Brooks and others are foolish, their money is not, and they are prepared to do the work.

502. Are you aware that the officers of the Department recommend that the reclamation should be made first? Yes; and I believe they will take about seven years to do it. I have no sympathy with red-tapeism.

503. What are your reasons for proposing that the bridge should be erected first? I, perhaps, have had more to do with the sinking of cylinders than any man under the Government. I know the difference

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between starting with a surface upon which to lay my material and starting where I have to make staging. That being the case, I say that the bridge will be erected at less cost with the sand as it now lies than it will be after the channel is dredged.

504. You are in direct opposition to the opinions of the officers of the Department? I am decidedly in direct opposition to them, and I speak from practical experience. I have had to do with the sinking of every shaft in the Newcastle District with cast-iron cylinders—they were all sunk on my plans and specifications. I think I have had more experience than most people in sinking cylinders.

505. What was your reason for stating that you do not think a tramway could be laid down over this bridge? I did not say so. I said I did not think it was possible to carry on tram and vehicular traffic at the same time if the road were of its present width. Unless they widen the road it would not be safe for the two to be carried on at the one time.

506. You are referring to the road over the old bridge? I am speaking of the road across the island.

507. Did I understand you to say that the bridge was going to take five years to build? I have read in the newspapers that they are going to take seven years to erect the bridge and to make the reclamation. I venture to say that the whole thing could be done within three years.

508. You are strongly of opinion that the bridge should be constructed forthwith? Yes.

509. And that the reclamation should still proceed? Yes.

510. And that the whole of the works should finish, if possible, simultaneously? I would finish the bridge as soon as I could, and I would do the same with the others.

511. What saving would it be to the Railway Department to have a high-level bridge? I suppose it is a very important crossing. They have there the interlocking system established, which means the employment of three men every day, and by having a high-level bridge they would save the wages of these men, besides the inconvenience which naturally takes place when trains are passing to and fro.

512. From your experience in the sinking of cylinders, do you think it would be advisable to build a bridge of a composite character in preference to an iron structure—iron cylinders, for instance, with a timber superstructure? I would not have any timber, because the white ants are too bad down in that district.

513. Do they attack the various descriptions of timber that are used there? All but turpentine, and I am not sure about that.

514. Do they attack tallow-wood? I believe they attack all the same. The white ants are playing havoc with the various timbers that the Government have used in erecting their buildings.

515. You think that the construction of a high-level bridge would materially increase the value of existing Crown lands, that the Government should reclaim these lands at once, and that in all probability they would meet with a ready and good sale? I believe that if they cut that channel, and give people facilities by erecting wharves, no doubt the land will sell rapidly indeed.

516. Do you anticipate a very considerable increase in the population on the island? There is no doubt that as wherever you offer facilities so do you get people to locate.

517. You have recently come from Newcastle, and I presume you have been in contact with a large number of its citizens? I have.

518. What is the concensus of opinion in reference to this bridge? The general opinion is that the bridge should have been erected, and they are very much surprised and disappointed that a block should have been put to it after the money was voted.

519. By their own mayor? I would rather not offer any opinion about the mayor.

520. *Mr. Cox.*] Is not the new bridge to be erected on the site of the old one? No.

521. Therefore it would not interfere with the traffic? Certainly not.

522. *Temporary Chairman.*] You say a large quantity of the reclaimed land would be available to pay the cost of the bridge—where do you consider it will be—at the southern or the northern end? At the northern end there will be a very large area of land which is now covered with mangroves.

523. That will require to be reclaimed before it can be sold? Of course; if the Government were to sell it now it would go at a very small price indeed; I do not think you would get more than £5 or £10, certainly less than £20.

524. The Government must do some dredging to find sand to reclaim? In the event of dredging there when the Horse-shoe is dredged out, instead of taking the silt outside, as they have hitherto done, they will no doubt deposit it there, and thereby reclaim the land.

525. You are aware that it is proposed to use new sand-pumps to lift the sand on to the reclaimable land? I remember Mr. Sutherland telling me about it.

526. A certain portion of the unsold land on the island is at present wholly unfit for sale? Absolutely.

527. And even some portions which have been sold are rather low? In the case of many of the allotments which have been sold, the houses have been erected where there is an ebb and flow of the tide.

528. Would it not have been much better if that land had been reclaimed and raised a foot or two? It would have been an improvement, and would have enhanced the value very much indeed.

529. Looking at that mistake, you would not recommend selling any more land until it is reclaimed, and raised well above the water-level? Not one acre.

530. That will take some time? It all depends on the way they go about it. If it were in the hands of a private company, I know how long it would take.

531. If it will take some time, you could not lay your hands on the money that the reclaimed land will fetch until you have reclaimed it? Certainly not.

532. You would have to be out of pocket for the bridge? You would have to be out of pocket for the actual outlay. You could not get a return from the land until it was ready for the market.

533. So, even with your scheme, if it were in a private company's hands, you must advance the money for the bridge first, and get the reclamation done as fast as possible afterwards? Certainly. If a syndicate gets a block of land, they generally borrow money and lay out streets, and the Government would have to adopt the same principle in regard to this land.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

BRIDGE TO CONNECT BULLOCK ISLAND WITH THE MAINLAND AT NEWCASTLE

REPORT.

THE Sectional Committee appointed to "inspect, take evidence, and report on the proposed bridge to connect Bullock Island with the Mainland at Newcastle," beg to report as follows:—

The Committee left Sydney on Thursday evening, 6th March, arriving at Newcastle the same night. On the following morning they drove round Newcastle to inspect the wharfage arrangements, drove over the existing bridge to Bullock Island, and visited the works and wharfs on that Island, and the Wickham bridge. In the afternoon they took evidence in the Municipal Council Chamber, and examined Mr. Christie, the Mayor of Newcastle; Mr. Morrison, the Mayor of Carrington; and Mr. Myers, the Mayor of Wickham; and several other gentlemen.

On the afternoon prior to the departure of the Committee to Newcastle, Mr. M'Lachlan, the Secretary to the Railway Commissioners, gave evidence before the Parliamentary Standing Committee to the effect that the Railway Commissioners desired to get possession of the area to be reclaimed along the Newcastle shore, for the purpose of sidings and other conveniences, which they greatly need; but as this would necessitate an overhead bridge they were prepared to contribute £17,000 towards the cost of the more expensive structure.

The Committee found that the opinion in Newcastle and at Bullock Island was decidedly in favour of a high-level bridge, as the present level crossing is often inconveniently obstructed, both for the road and the railroad traffic, and this would be still more the case if the reclaimed area were occupied with sidings. Under these circumstances the low-level iron bridge, as submitted to the Parliamentary Standing Committee, is not to be recommended; but as no plans for the high-level bridge have been prepared, and as there is no exact estimate of its additional cost, nothing can be said as to the exact contribution it will be proper for the Railway Commissioners to make.

It is estimated by the engineers that the reclamation, together with the construction of the high-level bridge, will take about five years, and during that period the communication between Newcastle and Bullock Island must be maintained. The traffic is considerable, and is increasing, and though there are two other bridges across Throsby Creek, the use of them involves a detour of not less than a mile between the centre of Bullock Island and Newcastle.

Under these circumstances the proposal of the Department to erect a sufficient, though temporary, bridge by the side of the existing structure, at a cost not exceeding £3,000, is reasonable, because the present bridge is unsafe, and any attempt to repair it effectively, so as to make it serviceable for two or three years, will probably cost more money than it is proposed to spend on the temporary bridge.

Altogether apart from the communication between Newcastle and Bullock Island, is the question of the swing in the proposed bridge, and the deepening of Throsby Creek, so as to give access by sea-going vessels to a basin to be excavated above the bridge. So far as public wharfage is concerned this work is not immediately urgent, because the basin to be constructed below the bridge will, with its jetties at the north end, give nearly three times the accommodation at present furnished along the dyke; and it is scarcely possible to conjecture when it will be necessary, for Government purposes, to increase the wharf frontage on Bullock Island by bringing into use the shore line above the bridge, and on the south-west side of Bullock Island. On the western shore of Throsby Creek, and in the parish

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of Wickham, is a private water frontage, which the owners are exceedingly anxious to see improved. From the limit of the reclamation to Wickham Bridge there is about 1,000 feet of land fronting Throsby Creek. In the grants of this land there was a reservation of 100 feet; but the cancellation of this reservation has been purchased by some of the owners. It was admitted in evidence that if the Government deepens the channel as proposed it would add three-fold to the value of this land, and the Mayor of Wickham testified that it would be advantageous to the district, and to the Government, if the whole of these frontages were resumed, so that the Government might reap the reward of the investment of its own capital in improvements. He also expressed the opinion that it would be better if the Wickham Bridge were removed, and replaced close to the Railway bridge across Throsby Creek, so that a larger space might be deepened out, and the wharfage on both sides of the creek extended.

Until the Railway Commissioners are in the position to utilise the land to be reclaimed, the low level temporary bridge will answer the traffic requirements of Bullock Island, but the high level bridge ought to be ready for use by the time the Commissioners are prepared to lay down their sidings.

Mr. Hurley dissents from that part of the Report which recommends the construction of a temporary bridge.

ANDREW GARRAN,
Chairman.

Sydney, 11 March, 1890.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

BRIDGE TO CONNECT BULLOCK ISLAND WITH THE MAINLAND AT NEWCASTLE.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

FRIDAY, 7 MARCH, 1890.

[*The Sectional Committee met in the Council Chambers, Newcastle.*]

Present:—

The HONORABLE ANDREW GARRAN (CHAIRMAN).

The Hon. WILLIAM JOSEPH TRICKETT. | EDWARD WILLIAM O'SULLIVAN, Esq.
JOHN HURLEY, Esq.

The Sectional Committee proceeded to consider the proposed Bridge to connect Bullock Island with the mainland at Newcastle.

Colin Christie, Esq., Mayor of Newcastle, sworn, and examined:—

C. Christie, Esq. 7 Mar., 1890.

1. *Chairman.*] What position do you occupy in Newcastle? The Mayor of the city.
2. How long have you been a resident here? Forty years.
3. Will you be good enough to make a statement as to the interest of Newcastle in this proposed work? I would much rather that you would put me under examination, although I will say a few words if you wish it. I think that the bridge is of great importance, and is much needed. Bullock Island has risen from nothing during the last twenty years. I have with me documentary evidence, in the shape of cuttings from newspapers dating as far back as 1869, to show what Bullock Island was twenty-one years ago. At that time a request was made for a school—of course this has nothing to do with the bridge, but I mention it for the purpose of showing the littleness of the island at that time. There were about twenty children on the island, and it was urged that a school should be erected in consequence.
4. Confine your statement to the interest of Newcastle in this work? Bullock Island has risen from insignificance to be a place of much importance. That importance is shown by the amount of coal shipped from Bullock Island. The amount of trade between Newcastle and Bullock Island is so great that a temporary bridge in my opinion, and the opinion of the public as expressed in public meeting, would not be equal to requirements. Observe the number of houses which have been built there within the last fifteen years, since the bridge was opened for traffic. I do not possess documentary evidence to show the exact date of the opening, but the first pile was driven in 1870, and it remained for five years after that before a cart could cross over in consequence of the gap between the two ends. It was contemplated that a drawbridge should be constructed. Afterwards that idea was abandoned, and it was planked over, but it was at least five years before any cart traffic could reach the island. The island then was simply nothing, but it has grown to the dimensions which you will have noticed to-day—a place of immense importance, a place of large population, and a place now incorporated.
5. *Mr. Trickett.*] Let us come to the question at issue. I presume it is granted on all hands that the bridge is insufficient for present requirements, and is in what may be described as a dangerous condition? That is so. For some time a man has been stationed at the bridge to prevent heavy traffic crossing it. It is dangerous to take a load of bricks over it. Heavy loads are forbidden to cross it.
6. The proposal to erect a bridge to cost £33,000 is, I understand, a proposal which must be considered in connection with the dredging out of the inner harbour of Bullock Island? That is not for me to say.
7. But do you not look at the two matters as being connected? It would require a man skilled in the works contemplated—a skilled man like Mr. Hickson—to express an opinion on that point.
8. The erection of a bridge which would cost £33,000, would necessarily be a work of some duration? It would.
9. And the present requirement is that something should be done immediately? Just so.
10. Therefore, do you not think that instead of patching up this present dangerous structure, it would be better for all purposes that a bridge, sufficient for present requirements, should be built alongside the existing one? I know it would be a great inconvenience to Bullock Island and Newcastle also, if traffic between the two places were to cease, which it seems it must do unless the proposed bridge or some other is built.
11. Therefore, for present requirements, something is urgently required to be done? Yes. Either this bridge should be made more safe or, if it is impossible to make it thoroughly safe, that something else should take its place.
12. During the time this large structure is being built—if it is built at all—something must be done to keep up constant communication between the mainland and Bullock Island? It must. 13.

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13. Looking at the matter in that light, do you not think it would be better to put up a bridge alongside the present one for the purposes of present traffic, rather than patch up this dangerous old structure, which Mr. Hickson has told us would cost almost as much as a new bridge, requiring new lock, stock, and barrel? Yes.
14. If the proposed bridge were built at the present time it would be built on dry land, so to speak? That is so.
15. And the drawbridge part of it would really at present be of no use at all? Of no use at all.
16. It would be no use until the harbour works which are contemplated in connection with the proposed bridge are completed? Just so. It would be of no use simply because the drawbridge would be crossing land instead of water.
17. You will have heard that the Railway Commissioners propose, if a large bridge is constructed, that it should even be of a more expensive character than the one suggested a few months ago? Yes, by raising the bridge higher. I noticed in yesterday's papers that it was suggested that £17,000 should be added to the money the Government contemplate spending on an ordinary drawbridge at ordinary level. For the extra £17,000, it is required that the bridge should be raised, so that the railway could pass under it, and so that shunting operations might be carried out under it.
18. What do you think of that suggestion? I am of opinion that the grade would be too great, and would necessitate more horse-power for loads going to Bullock Island or coming from Bullock Island. If the grade were not too great the bridge would be of great advantage, especially as our traffic would never be interrupted by passing trains.
19. Seeing how the traffic is inconvenienced between the custom house and the wharves, you consider that such a bridge would be desirable? Yes; I speak from experience.
20. Under these circumstances the work will be even larger than that the Committee have recently been considering? Yes.
21. That being so, do you not think there is still greater urgency for some good temporary structure being erected, to prevent any dead-lock in the traffic, whilst the new bridge is being put up? I am of opinion that we cannot do without traffic between Bullock Island and Newcastle.
22. At its present crossing-place? At its present crossing-place. It is impossible to do without it.
23. *Chairman.*] The great interest of Newcastle in this work is communication with Bullock Island? Yes.
24. And as you must have one or other inconvenience of crossing the lines on the level, or by means of a gradient—you think the gradient the least evil of the two? It depends on the nature of the gradient. If the gradient were 1 in 1 it would not do. If it were 1 in 40 or 60 it would be all right.
25. Any such grade as an engineer would lay out? I would say an easy grade.
26. *Mr. Trickett.*] What is the width of the present bridge? About 16 feet.
27. That is rather narrow, is it not, even for the present traffic? It is. It is dangerous, particularly if passengers are on it at the time two vehicles meet.
28. Even if a temporary structure were built, it would be better to have it a little wider for the present traffic? It would.
29. You think 22 feet would be wide enough for a year or so? It might do for a year or so, especially if it had a footpath connected with it.
30. *Mr. O'Sullivan.*] It is suggested by the Department that the construction of this bridge should stand over for about five years, and in the meantime they will erect a temporary bridge to give the accommodation you require. The cost of this proposed iron bridge would be £53,000, and the interest on that at 4 per cent. would be £2,120. Therefore five years' interest will amount to £10,600. On the other hand a temporary bridge will cost about £2,000. Which work do you think, in the public interest, should be carried out? That which is the most economical. In my opinion the temporary bridge would be the better, because the other would be of no use, seeing that it would cross a place which is at present dry.
31. Are we to understand that you are in favour of the temporary bridge being constructed? Yes; seeing that the erection of the other bridge is contemplated within a short period of time—that is twelve months or three years. This temporary bridge is absolutely necessary for the present traffic while the other is in course of construction.
32. Do you think, from your knowledge of Bullock Island and Newcastle, that a temporary bridge would prove equal to the growing traffic during those five years? Bullock Island is growing very rapidly.
33. Do you think a temporary bridge, to cost £2,000, would prove equal to that growing traffic? I am afraid it would not, and yet it would be a pity to spend more money on it. It would almost seem wrong to spend a great amount of money. It depends entirely on the length of time. If the bridge could be built within two years the present structure, with a little patching, would be sufficient for our present requirements. Piles should be driven in to strengthen it, and new girders put in where they are defective.
34. But you understand from the evidence of Mr. Hickson that the Department prefer to put up a temporary bridge? Yes.
35. They believe that the present bridge is not safe; therefore they propose to erect a temporary one? Yes, it would be better to have a temporary one than none at all.
36. You have been forty years in the district, and I want to know whether from your observation of the traffic between Bullock Island and Newcastle a bridge to cost £2,000 would prove equal to all growing requirements? There are those who know more of Bullock Island than I do. I know probably more than any of them as to what it has been.
37. And you think the temporary bridge would not prove equal to the growing traffic of five years? I would not say that it could not, neither would I say that it would.
38. *Mr. Hurley.*] You were chairman at the meeting held a short time ago, when certain resolutions were passed and forwarded to the Committee? Yes.
39. Resolutions were passed to the effect that you protested against the erection of a temporary bridge? Yes.
40. Will you state what the opinion of that meeting was? The opinion was decidedly against the erection of a temporary bridge. The expressions of the speakers were to the effect that the permanent bridge should be gone on with forthwith.
41. You are aware that it is contemplated to reclaim a large quantity of Government land in close proximity to Bullock Island? Yes.
42. Do you not think it would be to the advantage of the Works Department, and to the interest of the public

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public generally, to defer carrying out any large works such as you propose to have carried out, until that reclamation is finally dealt with? That is a question which would need to be answered by Mr. Hickson. Not being an engineer, I cannot answer engineering questions.
43. Did not one of the main questions raised at the public meeting have reference to the fact that the value of the land would more than compensate for the expenditure? So it will.
44. That is the land you contemplate reclaiming? Yes, it will double and treble the actual expenditure.
45. But, rather than be without a bridge, you would approve of the erection of a temporary bridge, pending the erection of a larger one? I think so. I think that the public even would be in favour of that, rather than of no bridge at all.
46. You are also aware that the Railway Department are desirous of contributing towards the cost of the construction of the bridge, providing it is an overhead or a high-level bridge? I am aware of that from the newspapers.
47. Do you not see that it will take a considerable time before a site for an overhead bridge can be decided upon? Yes, I see it will take a long time, and an expenditure of something like £50,000—£33,000 and £17,000.
48. Therefore, the work of reclamation, and the construction of a high-level bridge, would cause a delay which would be almost dangerous to the interests of Bullock Island people? Yes; unless they had a bridge of some sort. They must have a bridge of some sort.
49. Therefore, you actually fall in with the idea and suggestion of the Commissioner for Roads and Bridges, that a temporary bridge would be the thing? It would be the thing.
50. Instead of repairing the present bridge? I believe so. As Mr. Hickson has pointed out, the present bridge would require new stringers, new piles, and new lock, stock, and barrel. Those were the words he used. He has more knowledge of the real state of the bridge than I have, and I believe he speaks the truth.
51. You are aware that the population of Bullock Island and Newcastle are chiefly interested in this expenditure? Yes.
52. Do you think the people would stand paying the interest on the construction of this bridge? It would be a waste of money.
53. Are you aware that in former times, in this country, the people who gained an advantage by having a bridge over a given place had to pay a toll? I am.
54. Do you think the people would find fault if a toll were placed on a bridge of large dimensions, erected at a cost like that which has been mentioned. Do you think they would pay sufficient tollage to compensate the Government, and pay interest on the cost of construction? They would not like that.
55. You do not think they would? I do not think they would. Of course, I speak only as one person, and not as a Bullock Island resident.
56. *Chairman.*] You are aware from the plan you have seen, that it is proposed to make a large reclamation on the northern side of the railway line? Yes.
57. And to hand it over to the Railway Department for them to do their shunting upon? Yes.
58. Would it not be a great convenience to Newcastle if the Railway Commissioners could do that, and sell the frontages to Blane-street? It would be a great convenience from a municipal point of view, for we would then have a street of two sides. At present Blane-street is one-sided, and the other side is occupied by railway workshops.
59. Then it is to the interest of Newcastle that the reclamation scheme should be carried out? It is the finest thing we could have.
60. And when it is done, you would have a high-level bridge across? Yes; if it can be constructed, and I believe it can.
61. Then this latest proposal is really the one most in the interest of Newcastle? I believe so.
62. But it would be a waste of money to make the high-level bridge before there is anything to cross? Yes.
63. And if a substantial bridge, equal to all the present or prospective traffic for five years, is made between the Island and the mainland, it will meet all necessary emergencies? I think it will, so long as it does not exceed five years.
64. Then the plans of the department as they stand now meet with favour from you, as Mayor of Newcastle? Yes.

James Morison, Esq., Mayor of Carrington, sworn, and examined:—

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65. *Mr. O'Sullivan.*] You are Mayor of the Municipality of Carrington? Yes.
66. How long have you resided at Carrington? About sixteen years.
67. I suppose you are well acquainted with the character of the traffic that is likely to go across the new bridge? I have a pretty fair knowledge of it.
68. What is the character of that traffic? Machinery, boilers, waggon-wheels and axles, rails, pipes, pig-iron, and general merchandise, and you can also include stone and sand, and piles.
69. There is a good deal of heavy freight? Yes; there are loads from 1 to 8 tons.
70. Has that traffic hitherto gone across the old bridge before it was condemned? Yes; some of it has gone over.
71. Do you think a temporary bridge, constructed for about £2,000, would carry the traffic of the nature which you have mentioned? I think it would not meet the requirements of the place, for it is growing very rapidly.
72. But do you think it would do as a temporary bridge for five years? I could not say, because the traffic is increasing so greatly.
73. What is your reason for saying it would not suit the traffic,—would it not be wide enough? The traffic is increasing in quantity.
74. Why do you think the bridge would not carry this heavy traffic,—is it because the bridge would not be wide enough or strong enough;—I am alluding to the temporary structure? Of course I do not know what the nature of the bridge would be, so I could not give you an answer.
75. It would be about 22 feet wide, and something after the style of the present bridge, or perhaps a little stronger? I suppose if you put a bridge down to carry the traffic, it will have to be erected so as to carry heavy traffic.

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76. I am asking you as a gentleman who has had some experience about heavy traffic, to give us a common-sense opinion? I may state that there is a good deal of sand there, and unless you went down to the bed-rock the sand round the piles would, by the ocean swell and tides, be washed away, and be made unstable and unfit to support a bridge properly.

77. Is it a fact that the present bridge has been there twenty years, and has carried this traffic? It may have been there twenty years, but it has not been open for traffic. About sixteen years ago, when I first went to reside at Carrington, the bridge was not completed. The central part was left open, being originally intended for a swing bridge, and all the means of getting across at that time were by walking on the longitudinal girders. Six months after I was there, two planks and rails were attached. I think you may say it has been open about 15 years.

78. But were there any piles put down for that bridge? Yes; it rests on piles to some extent, but the approaches are well shingled.

79. Do you know what reason the Department has for desiring to postpone the erection of this bridge for five years. Do you know they contemplate carrying out some reclamation work on the south side of Throsby Creek, and cutting a channel on the other side? I am aware that is the intention. It has been the intention for some twelve years, so we are given to understand. We are in the engineering business in Carrington, and when we purchased the present site we were given to understand that the reclamation for the excavation of the inner dyke would be proceeded with and completed in ten years. As a member of the Carrington municipality I may say we have discussed the question of the erection of this bridge for something like two years. We have been holding correspondence with the Minister for Works in reference to the instability of the present structure, and we were given to understand first that £22,200 was to be spent on the erection of a new one. Again, twelve months ago, the question cropped up in respect of tram communication going from Lambton, Waratah, and round by Carrington, connecting with the bridge, and at the other end connecting with the loop line to Wallsend. We had an answer then from the Minister for Works, to the effect that he would get the proper officers to investigate the matter. Subsequently we got a reply that there would be a bridge put up of the value of £33,000, and we have been given to understand that this iron bridge was to be proceeded with at once.

80. You are aware that the £33,000 was to be for a low-level bridge? It was not stated to us what style of bridge was to be put up. We understood it was to be a swing bridge.

81. Have you heard since that the Railway Commissioners suggest that a high-level bridge should be constructed, and that if that is done they will contribute £17,000 towards the work? I have read of it in the newspaper.

82. That would make a total of at least £50,000 for the new bridge? Yes.

83. And the interest on that for five years at 4 per cent. would be £10,000? Yes.

84. Do you think, as a citizen and as a taxpayer, that it would be better for the State to incur that expenditure in interest only, instead of erecting a temporary bridge at a cost of £2,000 or £3,000 for a period of five years? The exigencies of the case, and the rapid growth of Carrington in trade and traffic will justify the Government in putting up a large bridge. A large revenue is being derived from the port of Newcastle, and I think we have a right to expect that a bridge of strength and utility will be put up—a good, strong, substantial bridge—not merely to last five years, but for a lengthened period, so that there may be an inducement to persons to erect premises which will further increase the traffic.

85. Then you think it will be better for the State to incur this expenditure in interest only, than to build a temporary structure? I think so. As I have already stated the exigencies of the case warrant it.

86. You are also aware that the department say that they cannot well erect this bridge until these reclamation works and the new channel are carried out? They could be proceeded with to a certain extent.

87. If these works were started and left in an incomplete state they would be of no use whatever to the people? I should imagine that the Government would see the necessity of proceeding with all possible speed.

88. You say they can be carried out to a certain extent. That implies that they cannot be completed? I do not mean that they should be commenced and stopped. I understand, your question is as to whether it will be waste to spend this money until the reclamation is gone on with. The bridge can be continued and carried on together with the reclamation.

89. Then the construction of the bridge would not, in your opinion, impede the carrying out of the reclamation, and the cutting of the channel? No, I think not.

90. That would go on irrespective of the bridge? I think so.

91. What is the area of land which would be accommodated in your municipality by this bridge? I have not gone into that matter.

92. Do you know how much land is in private hands at Bullock Island? I could not say, without referring to the municipal plans.

93. You are a partner in large foundry works? Yes.

94. Which way do you send your heavy material to the railway? By all means available—sometimes by rail, sometimes by water, and sometimes by the bridge.

95. But which route do you take to reach the railway? We generally go over the bridge.

96. Over the old bridge? Yes, or the Wickham bridge. Both are used. I have an estimate of the quantity of pig-iron we carted from Newcastle to our premises during the last year—488 tons.

97. Why do you not use the branch railway which goes down to Carrington near to your place? It is not always practicable, and, besides, we can get our goods delivered much cheaper by cartage than by using the railway.

98. Then if this iron bridge is constructed the Government will be making a competitor to take away the trade of their railway? I think not. You must put up a bridge for the benefit of the whole district. The whole district, not merely Carrington, will be affected by this bridge. It is the only outlet to the whole of the municipalities.

99. You were going to make a statement with reference to the traffic in pig-iron? I was going to say something about the vehicular traffic. We are undergoing an exceptionally dull time at present, but during last week there was a traffic of something like 500 vehicles and horses per day. In busier times we would perhaps have two-thirds more than that.

100. *Mr. Trickett.*] And it goes over the present bridge? Yes. That is the traffic from Carrington to the different districts.

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101. *Mr. O'Sullivan.*] By the condemned bridge? Yes. Of course you can go either by the Wickham bridge or the other. We have to use both on account of this bridge being bad.
102. Do you think the figures you are giving may be applied to the old bridge? Yes, I believe so.
103. And would they apply to the new bridge? Yes, and the traffic is largely increasing. Besides an engineering establishment there are two collieries, which use piles, timber, and iron work to a large extent. Again some of the vessels at the dock discharge the balance of their cargoes, such as pig iron. Instead of taking in coal ballast they carry this up to the wharf and discharge. Previous to getting in their lightering that has to be carted away. In fact, you can scarcely average the trade, it increases so fast. Especially during these last two or three years it has been increasing very largely.
104. Have you any further remark to make? I would only state that in the Carrington Municipality at the present time, there are about 400 houses, 4 churches, 7 hotels, 2 collieries, and 1 engineering establishment employing 120 hands. The collieries—Wickham and Bullock Island—at present employ 370 hands; the Hetton about 300, and they estimate that in a year or two, when they get their workings opened out, they will employ from 1,500 to 2,000 men.
105. Do the majority of the men who work at Bullock Island live there? Not at present. They come from different parts, but as they get regular employment houses are being erected.
106. What do you estimate the population of Bullock Island to be? I should say it will be about 2,500.
107. Have you got the valuation of the property? No.
108. Can you state the amount of rates received? About £1,100 last year.
109. The Wickham and Bullock Island colliery has its works on the main land? Yes.
110. Then they only have an air-shaft on the Bullock Island? No, they have their colliery as well.
111. But still their main works are on the main land? Yes, they go under Throsby Creek.
112. *Chairman.*] Their interest on the island is rather under-ground than above ground? Yes.
113. *Mr. Hurley.*] Do you believe that if something is not done to repair the present bridge or to erect a new one, some serious accident may happen to some of the inhabitants, either of Newcastle or Carrington? It is probable.
114. The dangerous condition of the bridge is likely to bring about an accident of a serious character? It has been considered unsafe for these last five years.
115. You have represented that to the Government through letters from the Municipality of Carrington? The municipality has been in operation for two years and ten months, and we have represented it during that time. Previous to that we saw Mr. Darley. We wanted a foot-bridge, attached to the bridge but he objected, on account of the unsafeness of the structure.
116. On account of these representations were you not informed that £33,000 would be placed on the estimates to satisfy the demands of the municipality? The first offer, I think, was £22,000. We have had many offers. At one time there was an offer of £7,000 to make a new bridge. Then we were told it was contemplated to put up an iron bridge. There has been nothing else but a series of promises.
117. You believe that the development of the place warrants the construction of an iron bridge? I do.
118. And you think the future outlook warrants the construction of a tramway into the midst of your district? Decidedly.
119. That has been foreshadowed by representations from your municipality, as well as by promises made by the Government? Yes.
120. Therefore, if a bridge of a permanent character were constructed, and a tramway laid into the harbour at Carrington, it would be a reproductive work for the Government? Decidedly.
121. Have you any knowledge of the value which would accrue to the Government in regard to the lands which would be reclaimed? I think I have. I could not say the quantity, but there is a considerable quantity of property. I could give you an idea of the value of the land. Some twenty years ago half-an-acre was bought for something like £20, and other pieces were bought for less. Now, in one instance, £1,200 and £1,700 have been given for half-an-acre of ground. This shows that the Government will be amply recouped by putting up this bridge.
122. Do you know the value of a piece of land (say) near Blane street. Have you ever heard talk of a piece of land there being valued at £67,000? No.
123. Have you any knowledge of the acreage which it is expected will be reclaimed when these works are carried out at Bullock Island? Yes.
124. I am told that it is anticipated that in one strip there will be about 120 acres reclaimed. Can you tell us what the value of that land would be per acre? From £2,500 to £3,000 per acre. That would be the present value, and when the bridge is completed I should think it will be double.
125. So that the construction of the bridge would be of national importance to the Government in advancing the value of your own land? Decidedly.
126. You have heard of Mr. Hickson's objection to the construction of a permanent iron bridge at the present time? Yes.
127. I presume you took part in the public meeting held a short time ago? I did.
128. Can you give a synopsis of the objections made by the various speakers to Mr. Hickson's scheme? They had been promised so often by the Government that this iron bridge should be made, that they considered they had a right to that bridge, and that the Government should put it up. The impression is that if the temporary bridge is erected the matter will be left there, and no further action will be taken in reference to the iron bridge.
129. In fact you imagine that you have been deceived by the Department so often that you are doubtful as to their intention to carry out the more permanent structure? We can look upon it in no other light, as we have had promise after promise.
130. Do you think the construction of a more permanent bridge would lead to an increased population settling there? I think so. Then the swing-bridge which we are looking forward to will open up the communication towards Wickham.
131. Do you think the trade of Newcastle is likely to increase materially during the next ten years over the past five years? I think so. It has been making rapid strides during the last five years.
132. In what direction? Every direction.
133. What is your chief export? Coal.
134. Do you anticipate that the coal export will increase materially during the next five years as against the past five years? I think so, as we have been undergoing difficulty in getting it away. Owing to the vessels not arriving here, heavy orders have been in and they have not been sent away.

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135. Is not the accommodation sufficient to satisfy all present demands? Yes, so far as the wharfage is concerned, but not so far as the bridge is concerned.
136. I am now speaking about the probable trade? Yes.
137. It is anticipated that the reclamation of land, the construction of bridges, and other works, would be likely to develop the place. I want to know how it is going to develop in the future, as compared with the past? The place is growing in population, and its requirements will therefore be greater. It is only by increase of population that any city will rise. Moreover, being so close to the seaboard, we have every facility for increasing and carrying on trade.
138. Has not the Government amply provided for all the demands necessary for shipping in connection with Bullock Island? They have, in connection with the exportation of coal, and they see the necessity of increasing it further.
139. Are not many of the berths erected by the Government now vacant owing to the want of ships to take the coal away? There seems to be a scarcity of ships, but I have known the time when they have been double banked along the wharf, and when vessels have had to wait as much as nine and eleven weeks to get loaded. The Government saw the necessity for more accommodation then, and they have gone forward. I think the Government would be wise to have more wharfage and every other accommodation for the purpose of encouraging an increase of trade.
140. But still you will admit that there is at the present time twice the amount of accommodation necessary and workable? The present is an exceptionally slack period.
141. Have you taken into consideration the probability of the development of the southern mines in close proximity to the metropolis? I have.
142. Do you think that will interfere very materially with the future development of your mineral resources here? I think not. Our coal is superior.
143. Is there any likelihood of any industries, apart from your own, springing up on Bullock Island? I should think so. I look forward to the time when we will have an ironworks there. We have iron ore at Dungog, and we can have water accommodation to fetch it down.
144. Has it ever been represented by any of your deputations, or through your Municipal Councils, that great advantages will be gained by the reclamation of certain portions of Bullock Island? The great benefit to be derived by the reclamation will be the amount of area and frontage to the water. We all know when anyone has a water frontage that it always increases the price and value.
145. If a proper channel is made through Throsby Creek, and reclamations are carried out on a permanent basis, do you think the Government will meet with purchasers for what they reclaim? Decidedly so.
146. You think there will be no difficulty in finding purchasers? No; in fact we, as a Council, have asked the Government to put up some ground they have now for sale, and they have withheld it for some purpose of their own which they have not revealed to us.
147. *Mr. Trickett.*] Mr. Hickson has stated that it would be very undesirable to do anything to the old bridge—that it has gone so far that it is beyond repair. Do you agree with him in that idea? There are various opinions in reference to that matter. Of course I respect Mr. Hickson's opinion, but at the same time there are other experts who have stated that it can be repaired.
148. Do they state at what cost? I heard one gentleman say from £1,000 to £1,500.
149. Would it be better to repair it or to build a new temporary bridge? Well, the bridge is so narrow that unless it were made wider it would scarcely meet the requirements of the increasing traffic.
150. It will necessarily take some time to construct a costly bridge of £33,000 or £50,000? Yes.
151. What time do you think it will take? I have not seen the plans. Then this question of the expenditure of £17,000 by the Railway Commissioners would mean an alteration in the plan. But I should think if the whole scheme, including the bridge, were carried on with all despatch, there would be nothing to hinder its being completed in seven or eight years.
152. Are the people between Newcastle and Bullock Island prepared to put up for seven years with the present tumble-down structure? I suppose they will have to be content, as they have had to be these last five years.
153. They would be content? I don't say they would be content.
154. Would you be content, during the six or seven years it will take to construct the bridge, to go on with the present unsafe structure? It is very undesirable.
155. Therefore it is absolutely necessary to do something to make good the present bridge, or to erect a temporary structure near it? The question is this:—are we to get the iron bridge that has been promised so long, or are we to accept the statement that a temporary bridge will be put up to carry us through, until the iron bridge is completed. I have heard a great number say they would rather wait until this bridge tumbles down, than do without an iron bridge.
156. Do not the people fear that if a temporary bridge is put up the erection of the big one will be blocked? No doubt there is a great deal in that argument, and they believe it will be the case.
157. If the expensive bridge is put up where do you think it should start from on the Newcastle side? From Union-street.
158. I mean how near to Newcastle should it start—close to Blane-street near the site of the present bridge or north of the present bridge? It should go to the west side.
159. But if we construct an expensive bridge, where would you commence the end of the bridge nearest to Newcastle? It would have to be started sufficiently near to allow of a proper gradient from the street.
160. Over the railway? Yes. When this reclamation takes place it is contemplated to shift this line to allow of another frontage of shops to come in on the other side of Blane-street, which will give us a better chance of having an easy gradient over the railway shunting ground. This will allow the swing to take place, as it were, on the level part. We have plenty of room on the Carrington side.
161. But this idea of building the bridge right up to Blane-street has only been started since the Commissioners decided that there should be a high level bridge? I could not say. I was not aware of what the intention was in regard to this iron bridge. The correspondence has referred to an iron bridge—a swing bridge.
162. But seeing that there is such a large traffic between Newcastle and Bullock Island, do you not, as a business man at Carrington, think some temporary measure should be taken in hand to give safe communication across the structure to Carrington? Unless traffic is to be blocked. One or other will have to take place—I should say repair the present bridge.

163.

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163. Do you not think that building the bridge before the exact locality of the stream where the swing is to be, is fixed, would be putting the cart before the horse? I think not. The Government should have their plans of what the bridge is to be, and both works should be carried on at the same time.
164. The reclamation of the inside of the dyke is a large work? Yes.
165. And it will take many years? Well, at the present rate of doing work it will.
166. Has any money being voted to it? I am not aware.
167. At any rate, nothing in a large way is being carried on at the present time? No, the excavator which you saw to-day has only just commenced operations.
168. Do you think a substantial bridge, 22 feet wide, capable of carrying the heavy traffic which would go between Newcastle and Bullock Island, would answer for the next three or four years? There is the Wickham interest to be considered. There are many people on the Wickham side, and it will be to their detriment unless a swing bridge is erected.
169. For what purposes? To get their lighters in.
170. But the lighters go under the present bridges, don't they? Yes, with great difficulty.
171. But if a bridge were built with a sufficient camel-back to enable the lighters to go in, there would be no inconvenience? I would rather allow the Wickham representatives to answer the question.
172. But, as far as you are concerned, if a bridge were erected 22 feet wide, capable of carrying any load which might be required to be taken over, that would be sufficient for two or three years, pending the construction of the larger structure? It will do, providing we get that structure. That is the main thing, and that is what we wish to enforce on the Government. There is a great necessity for this bridge, and the worst feature is that its construction has been delayed so long that it has become almost painful to talk about it. We think we are entitled to the bridge, owing to the many professions which have been made to us. We have had our hopes raised and raised, until, at last, hope deferred has made the heart sick. We have just grounds for complaint.
173. At any rate you must have means of communication of some kind? Decidedly.
174. *Chairman.*] Your present bridge is on the level, crossing the railway? Yes.
175. That is often an inconvenience to that traffic? When the railway gates are closed it is.
176. And also an inconvenience to the railway? I daresay.
177. And if this reclamation is made, and a great number of parallel lines are laid down for shunting purposes, a level road will be more inconvenient than at present.
178. As a Carrington man, and looking at the inconvenience of the level crossing, and setting against it the inconvenience of a gradient up and down, which is it most to the interest of Carrington to have, a high-level bridge or a low one? A high-level bridge.
179. You clearly think that is so? Yes.
180. It certainly will be to the interest of the railways? Yes.
181. It would be very inconvenient to have all that shunting done on a level crossing? Yes; if it were a level crossing the traffic would have to wait until the shunting was finished.
182. Then on public and private grounds you think a high-level bridge is the best of the two? Yes.
183. Then if the work is carried out, you will, after all, be better off with a high-level bridge than a low-level bridge made four years ago? Yes.
184. So that this delay, which has caused so much vexation of spirit, may after all turn out to your advantage? According to the present outlook, it may.
185. If a low level bridge had been made at a cost of £33,000, even you would hardly have advocated pulling it down, to put up another at a cost of £50,000. No.
186. You would have been inconvenienced with a low-level bridge? I suppose so.
187. And you are going to be better off, after all, with a high-level bridge? Yes.
188. So that patience will have added a perfect work, after all? It is to be hoped so.
189. As Mayor of Carrington, you are largely interested in the coal trade, and you think the present wharfage is sometimes deficient? Yes.
190. You know that money has been voted to deal with the eastern side of the inner basin? I am not aware that the money has been voted.
191. The proposal has been settled? Yes.
192. When carried out, the southern end of this dyke and the eastern side of the Newcastle basin, will give accommodation to 10 more cranes? About that.
193. That will nearly double the present accommodation? Not quite; I think they have 12 or 15 cranes.
194. When the whole of the reclamation is carried out, and the wharf is made at the northern end, and the two long jetties proposed by Mr Hickson are put up, there will be nearly three times the present accommodation? That will all depend on the number of cranes erected.
195. But putting the cranes at the same distance from each other as they are now? Yes.
196. How many years do you think it will be before three times the present accommodation will be too little for Newcastle trade? It is hard to say.
197. Will you live to see it, do you think? I could not say, but I hope so.
198. At any rate it will be some time hence? Yes.
199. Then the Government can, having this swing bridge, make wharves on the western side of Bullock Island, and that will give additional room, if wanted, for coal ships? Yes.
200. But until the Government wants that bit of wharfage on the western side of Bullock Island, it has no special need for this swing bridge? I do not suppose the Government has any special need for it.
201. There is already a large frontage to deep water on the eastern side of this bridge? Yes.
202. So that for Government purposes alone, the swing bridge will not be wanted until they want to utilize the frontage beyond the bridge? The Government may not want it, but the public has to be considered.
203. So far as you are concerned, there is a possibility of three times the present accommodation being provided in your municipality alone? About that.
204. And it would take some little time before Newcastle uses it all up? On the Newcastle side they have diverted a good deal of their export of coal, on account of the coal shoots or staiths. Then there were steam cranes down towards the pilot sheds which have been taken away, and they will have to put others in their place.

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J. Morison, Esq.
7 Mar., 1890.

205. But the whole of the coal trade is now concentrated on the dyke? Yes.
206. And the accommodation there will be trebled within the Carrington municipality when the excavation is completed as far as the bridge? I do not say it will be quite trebled.
207. But pretty nearly? Yes.
208. So that there will be an immense additional accommodation given to coal ships coming to Newcastle? Yes.
209. So far as your municipality is concerned there are no private frontages to the water? There are a few.
210. Whereabouts? On the eastern side—on both sides.
211. They were all killed by the Government proposed new wharfage? They have them, anyhow.
212. But in the previous case, when the Government made the dyke, they disregarded all private frontages? There are residents who will require to be recouped before the Government claim it now.
213. But the water frontage will be a Government frontage when the work is completed? Yes.
214. So that the Government money spent in making these frontages will make public and not private frontages? Yes.
215. There will be no private frontages improved by the expenditure by private money. The public will get the benefit of its own expenditure? Yes, and it will improve the property in close proximity.
216. But it will not improve any private wharf frontages? No.
217. The Government will have all the improved wharf frontage which its own expenditure creates? Yes.
218. Of course it will give greater additional value to the whole of the land in Bullock Island? Yes.
219. What additional value do you think the expenditure of this quarter of a million will give. Do you think it will add 25 per cent. to the land? I think so.
220. Do you think the value of this bridge alone would add 25 per cent. to the value of the land? Not far short.
221. You, as Mayor, look to have far better rates when the bridge is completed than you get now? Yes.
222. You expect a high valuation? Decidedly.
223. And the Government expenditure will make your revenue greater than it is now? Yes.
224. And of course it will make the private incomes of land owners greater too? Yes.
225. Presuming the bridge costs £50,000, do you think it will add £50,000 to the value of private property in Bullock Island? I think it would, in the course of time.
226. You think your assessment would go up £50,000? I think so. Of course, it will take time to do it.
227. But you quite expect it? Well, it will be the most valuable municipality in the district, owing to its close proximity to the shipping interests.
228. You have said that there is a great demand for land, and that industries are going to develop upon the island. What is the special advantage for industries on Bullock Island over those on the mainland? Their close proximity to the water frontage.
229. But although it is all public frontage, do you think that would still give an advantage over private frontages? It will not be all public right round the island, but only where wharfage is included.
230. But the Government is not likely to sell any of its water frontage to private people? There are some properties sold, I think, on the Throsby Creek side.
231. With frontage? With frontage, I think,
232. The northern part of the island is public property, is it not? Portion of it is. There is a reserve.
233. If this bridge is made, and the reserve is raised by silt, will it not make a valuable property for sale? Yes.
234. It would be a good speculation for a private person to make the bridge if he could be recouped by the grant of the land on the reserve? It would.
235. The reserve alone would more than pay for the bridge? It would.
236. And pay for the reclamation too? Yes.
237. So that the Government really has in its own hands the power of recouping itself for the expenditure on the bridge? Yes.
238. If it goes to the double expenditure of the bridge and reclamation it can pay the whole? I believe it would.
239. You talk about a tramway. Do you want to connect the tramway from Bullock Island with the existing tramway to the mining township? Yes; there is a tramway at present to Wallsend, and we propose joining at Lambton.
240. Which bridge do you propose to go over? The iron bridge, to connect with the city tramway.
241. But your tramway there would simply go to Newcastle station and go out again? Yes.
242. Practically, then, you only want a tram connection with Newcastle? Yes.
243. But if you want the bridge and new road, do you want a tram for such a distance as that? It would take in Lambton, Waratah, and Calcine Flat.
244. But your connection is with Newcastle; you will have to go to Newcastle? Yes.
245. You have already two other bridges connecting the island with Newcastle? Yes.
246. But the principal bridge is the one which connects you with Newcastle direct? Yes.
247. There is more traffic over that than the other two put together? Yes, at the present time.
248. But from your works you could cross the Wickham bridge and go to Newcastle, even if the other fell down? We have had to do that. The other bridge has become rather unsafe.
249. All your bridges are shaky then? They are. In fact we are badly bridged all the way. They have all been of a temporary character.
250. You are getting tired of temporary bridges? Yes.
251. Is the more northern one a shaky bridge? It is a light temporary bridge. There could be a good deal of traffic across there to the smelting works, and out to Waratah. There is a soap works out there.
252. Do you know what the Wickham and William-street bridges cost? No. I do not think they cost more than £1,000.
253. Causeway and all? With a causeway it would cost more. It is only narrow and short.

254.

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254. *Mr. Trickett.*] The northern end of the island, which Dr. Garran has asked you about, and which belongs to the Government, is marked on the plan as "Mangrove Sand, covered at spring tide"? Portions of it are.

255. What is it worth an acre at the present time? Taking a prospective view, I think it would be sold for £1,000 an acre.

256. Could you give an idea as to what it would cost to make it all level country above spring tides? No, I could not say.

257. I suppose it would be very expensive? Well, if they had the excavator working in the creek, it should soon fill up the part desired to be reclaimed, and make it of benefit, so that shipping might go down at the northern end. If it were made up above the level of the water, its value would be increased by one-half. It would be worth about £1,500 or £2,000 an acre.

258. Do you know how many acres there are? No.

259. *Mr. O'Sullivan.*] You have stated that it would take seven years to complete the work. Do you refer to the bridge alone, or the reclamation and the bridge combined? I alluded to the bridge in connection with the other work.

260. Do you, as an iron-master, tell us that it will take seven years to construct the bridge? To make it, and sink the cylinders, and make it fit for traffic. I am only in a measure speaking at random, as I have not seen the plans or the quantities.

261. But as an iron-master, you speak with some authority when you say it would take seven years to construct that bridge? I am only basing my calculation on the manner in which they generally carry out Government work.

262. Are the people at Bullock Island to rely for seven years longer upon this defective bridge? Well, they should not.

263. But how do you propose to remedy it, if you prefer the iron bridge to the wooden one, and the iron bridge will take seven years to put up? The present bridge will require to be repaired, so as to enable a limited traffic to pass over.

264. But the Department say it cannot be repaired—what then? If it cannot be repaired I suppose they will have to put up a bridge to carry the traffic until the iron one is made.

265. You have come to the opinion, then, that a temporary bridge will have to be erected whilst the iron one is being constructed? It is quite evident that we require a bridge to get across, and if it is possible to repair the present bridge it would, as a matter of economy, be wiser to do that than to erect another bridge of a temporary character.

266. We have it in evidence that the present bridge cannot be repaired, and that it is dangerous. If you wait for the iron bridge you would wait for seven years, and be in danger all the time by crossing the present bridge? It is a matter of inspection, I suppose, as to whether the bridge can be sufficiently repaired or not. I do not think the bridge has been inspected with the object of showing whether it is worth repairing, or whether another bridge should be erected.

267. Has any wool ever been shipped from Bullock Island? I do not think so.

268. Are there indications showing that it is likely to be a place for wool shipping? Not unless the Government allow it.

269. *Mr. Hurley.*] Do you not think you might modify the seven years you have spoken of. You are aware of the magnitude of the bridge over the Hawkesbury. Have you any idea of the time that enormous bridge took to construct? No; I do not know how long the bridge took to construct.

270. Do you not think it took less time than the time you put down for the construction of this small bridge? As I said before, I referred merely to the slow mode in which Government work is carried on in Newcastle.

271. Here is a plan [*producing it*]. That will give you an idea of the difference between a low-level and a high-level bridge. Do you think that would suit the requirements as foreshadowed by the Chairman. You will see the level of the rails at the present time. That would give you a certain height above the railway crossing. I should like to know whether you would be in a position to put in a tender for the construction of a bridge manufactured from iron. You say there are large mineral deposits near Dungog? Yes.

272. Would you be in a position to take a contract for the construction of that bridge, manufactured out of the raw material of that district? We have not the iron works. We want the iron manufactured. It is not at present manufactured in the colony.

273. Would you be in a position to put in a tender for the construction of a bridge such as is foreshadowed? This is merely a sketch plan. There are no particulars.

274. Do you not think a high class iron bridge could be constructed in less than two years? When I said seven or eight years I was alluding to the slow method of doing work—not to a contractor undertaking the work in a certain time, but to the whole scheme.

275. But if tenders were invited, do you not think a work of the description foreshadowed on the plan, could be carried out in two years? Do you mean the excavation as well?

276. I mean an actual completion of the bridge, so that it may be ready for traffic. Supposing you had to send to England for the parts, could you not put the bridge up in less than two years? I doubt it. You see that an excavation has to be made. What I was referring to was the completion of the bridge, with the reclamation going on at the same time.

277. You admit the necessity of a temporary structure in order to avoid the dangerous character of the present bridge? A temporary structure must be built, or this bridge must be, as a matter of economy, sufficiently repaired.

278. Therefore a repairing of the present bridge, or the construction of a temporary bridge, is an actual necessity? It is, if we are to have the traffic.

Mr.

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Mr. Morison subsequently amended his evidence by forwarding a letter to the Chairman, as follows:—

To the Hon. A. Garran, M.L.C. Carrington, March 7, 1890.

Dear Sir,—My attention has been drawn to a portion of my evidence given at the Newcastle Council Chamber before the Sectional Committee this afternoon, in answer to Mr. J. Hurley's question,—"How long will it take to make an iron bridge to go over to connect Newcastle with Carrington?" My answer should have been, viz., "About two and a half years." I must admit I was confused at the time, and understood it to mean the reclamation and building and erection.*

James Myers, Esq., Mayor of Wickham, sworn, and examined:—

J. Myers, Esq. 7 Mar., 1890

279. *Chairman.*] What is you official position? Mayor of Wickham.
280. How long have you been a resident of Wickham? About eight years.
281. What is the special interest of Wickham in the work under the consideration of the Committee? The special interest of Wickham is to get an opening, and a navigable opening, into the waters of Throsby Creek.
282. You are more interested in the deepening of that creek, and in better access to that water, than in a bridge to Carrington? Yes.
283. So that the two municipalities have two separate interests in this matter? Yes.
284. According to the map before me the frontage on the western side of Throsby's Creek, from about the soap-works to the bridge, is about 1,000 feet? Yes.
285. And between Hannell-street and the water it is subdivided into allotments? Yes.
286. What sort of water frontage have they at the present time? It is very shallow. You can scarcely get a small boat up to it,
287. Not even a lighter? No; at low water they are simply muddy flats.
288. It is not a frontage at all? No.
289. And the private right goes only to the high-water mark? That is all. I believe there are a few who have bought a water frontage. I believe the late Mr. Henderson, whose business is now worked by Mr. J. F. Ellis, bought the water frontage, and some other residents as well.
290. The bridge, as it stands at present, is practically no hindrance to these people, because if there were no bridge they could not get a lighter up at low water? No.
291. It is only the high-water frontage? Yes.
292. And then it is only a few feet? About 4 feet.
293. At high water it is 4 feet, and at low water it is a mud frontage? Yes.
294. So that the present bridge is no hindrance to navigation? Not at present.
295. And what the owners of this 1,000 feet want is an improved frontage and a good access. As Mayor, you know what these properties are rated at. What are these properties supposed to be worth per acre, or per foot, between Hannell-street and the water? The frontages on from Hannell-street are worth from £15 to £16 a foot.
296. And if this deepening is carried out, and the swing-bridge is erected, you, as Mayor, will expect that they will be rated more highly? Yes.
297. What do you think it will add to their value? It will nearly double them. Where there is access to the wharf it would treble them. The amount of traffic which will be brought on the wharves will be something enormous.
298. Do you not think it will more than treble the value? I believe it would.
299. Won't it make a first-class water-frontage of what is practically no water-frontage at all? Yes.
300. What is the value of that 1,000 feet of land between Hammil-street and the bridge? I could not tell you.
301. I am talking of the soap-works to the bridge? That is from Henderson's place to the Wickham bridge. That is 1,000 feet at about £15 a foot.
302. And that would be quadrupled in value? I think so, quite.
303. The Government expenditure would add a value of £45,000 to private property? Yes.
304. Would that £45,000 pay the cost of the deepening and the swing-bridge? I do not think it would. We should require a depth of 20 feet to get ships up.
305. Have you formed any estimate as to what the cost of the deepening of Throsby Creek would be? No. I was under the impression that that reclamation was included in the general reclamation scheme. I was altogether at sea when Mr. Hickson told us it was not so.
306. We have been told by Mr. Hickson that the reclamation scheme only comes up to the bridge? Yes.
307. You heard the Mayor of Carrington say that for public wharfage purposes, the Government would hardly want this swing-bridge, until all the new wharf they propose to make is occupied? Yes.
308. And after that they would want to get into Throsby Creek? Yes.
309. You agree with that? Yes; for public purposes the swing-bridge is not wanted for coal purposes at present, but the amount of land the Government hold on the western side of the bridge up to Wickham bridge is very valuable.
310. If they want to utilise the western side of the island, they must have a swing-bridge and improve their frontage? Yes.
311. Meanwhile, you want the swing-bridge and the deepening to improve these private frontages? Yes.
312. Do you think the owners of the private frontages would pay the cost of deepening? I do not think they would.
313. Do you think it would be right for the Government to go in for this expenditure for the sake of adding £45,000 to the value of the property of private people? If it is not done in this district, it is done in others. I know the Government have spent a lot of money for private enterprises.
314. But that is more of an incidental character. Public works, incidentally, give a value to private property? I believe there are a great many private wharves in Sydney which have had much money laid out upon them for the benefit of private individuals, and I think the Government would be justified in dredging and reclaiming that portion of the land.
315. So far as I know, all private dredging done in Sydney for private purposes is paid for at a stipulated rates? I was not aware of that.

316.

* Note (*on revision*):—I desire to make this addition to my evidence. I wish it distinctly understood that in all the questions bearing on the time it would take to complete the bridge I was mentally including the whole scheme complete—reclamation, dredging, building bridge and approaches—hence my answer, seven or eight years. During my cross-examination I lost sight of the point, the time to complete the bridge alone. My mind was occupied with the desire to have the iron bridge built, and not the temporary wooden structure—the object assigned me at the public meeting. Not having any plans or specifications to guide me of the proposed iron bridge, I could not give any correct estimate of the time to complete the same. But as I now understand the proposed iron bridge foreshadowed by the Chairman of the Sectional Committee, having reference to high-level bridge, swing and approaches, I should say, approximately, the time ought to be from two to two and a half years.

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316. You do not know the amount which will be required to carry out this work? No.
317. But you have an idea of the value of the land for private property? Yes.
318. It is an unknown expenditure, but a known increase in value? Yes.
319. As Mayor of Wickham, do you think it would be a good speculation for the Government to buy all these private properties, and come in for the benefit of its own expenditure? I believe it would pay them, and they would benefit by it.
320. To buy out these people at £15 a foot? I would not say it would do that.
321. You think the price would jump up if the Government wanted to buy it? Yes.
322. You know the Government is able to take land at a valuation? Yes.
323. I suppose the value would not be much above what you placed on the assessment as a reasonable approximation? No.
324. It would not be enormously above it? No.
325. Say it was £20,000;—do you think it would be a good speculation for the Government to buy all that frontage below Wickham bridge at £20,000, and then deepen Throsby Creek? I believe it would. There are plenty of persons there now who hold a water frontage, and who make back yards of it.
326. Do you think the people of Wickham who are not interested personally in these water frontages would be willing to see the Government do a thing of that kind? Yes.
327. It would improve the township generally to have a public wharf? Yes.
328. And you think it would pay? I believe it would.
329. And you think there would be a large business done? Yes; there is a large number of timber yards, &c., along that frontage.
330. You mean trade is waiting for a better frontage? Yes.
331. What sort of trade? Principally timber.
332. Not manufactures? No.*
333. Is that the best natural site near Newcastle for it? Yes. Hudson Brothers have a piece of land, and also Bibby and Cook, and they are erecting a large sawmill at present.
334. If it were made Government land, the Government could make a little railway between Hammil-street and the water frontage, and accommodate the whole of the wharf? Yes.
335. It would be more utilised as a Government frontage than a private one? Yes.
336. Whilst it is a private frontage there is no likelihood of a private railway? No.
337. So that the railway traffic, as well as the utility of the site, would be greatly increased by converting that into public property? Yes.
338. Is there no other part near Newcastle equally convenient for timber? I don't think so.
339. Is Stockton not so convenient? No.
340. Nor any part of Bullock Island? Yes, but it would have to go across the bridge. Most of the timber trade is out that way.
341. Do you think any advantage would be gained by the Government deepening the northern end of Throsby Creek? Not at present. There is no demand for it.†
342. The trade is all down near Newcastle? Yes.
343. You think this deepening is wanted in the interest of local trade? Yes.
344. Though not in the interest of coal shipping? No; You must have other accommodation besides the coal wharfage.
345. This Wickham bridge is not a valuable structure? If the Government were to buy property right up to the Wickham bridge across Throsby Creek, and deepen the whole up to the railway bridge, and give you a transit across the railway, would it be quite as convenient? Yes.
346. And it would be in the public interest? Yes; in fact there was a hard fight when that bridge was built, as to whether it should be put alongside the railway, or where it is now.
347. If the Government repossessed themselves of the whole of the private frontage between the Soap Works and the railway bridge, and ran a railway along, it would be an immense public improvement? It would.
348. And would pay for itself? I believe it would.
349. The Committee is to understand that the Wickham interest in this matter does not concern the bridge at all? No; we want a swing-bridge and deep water.
350. *Mr. O'Sullivan.*] What is your business? A builder and contractor.
351. How long do you think it would take to construct the iron bridge as proposed by the Department? I have never had anything to do with iron, but making a comparison between that bridge and the Hawkesbury, which was constructed in three years, I think it ought to be built in eighteen months. It is not a quarter or a tenth as big as the Hawkesbury bridge.
352. Do you mean to say that all the ironwork could be prepared, and the bridge erected within eighteen months? From that time to two years.
353. How long would the reclamation work take? Another three years. I presume they would be slow to start the reclamation work, and would not commence until the bridge was nearly finished.
354. How deep do you imagine the Throsby Creek to be? Twenty to twenty-five feet.
355. At that depth you could bring large vessels up to Wickham wharves? Yes. We have had a wharf at Wickham for seven years, and there has been no boat alongside except the waterman's boat. They have not been able to do it.
356. Is it a Government wharf? Yes. It was built in some one's interest, but I have failed to find out whose. It cost about £700.

357.

* NOTES (*on revision*):—No 332. There are at present several manufactories on the shores of Throsby Creek, as well as other industries; but, in consequence of the shallow state of Throsby Creek, land carriage has to be substituted for water.

† No. 341. The north and north-western portion of Throsby Creek carries the drainage of all the area on the east side of the hills and ranges about Adamstown, Lambton, and Waratah, also the Hamilton, Newtown, Islington, Tighe's Hill, and Wickham drainage; and during the last visit of Dr. Ashburton Thompson, Health Officer, in our last dry season, that gentleman found the creek in the vicinity of Tighe's Hill in a filthy and dangerous condition; so much so, that there was an outbreak of sickness in that locality of a serious nature. All this the Health Officer attributed to the fact that the creek being remarkably circuitous at Islington and Tighe's Hill, and the currents being impeded by shoals, mud banks, snags, and other obstructions, caused quantities of filth and refuse from tanneries, slaughterhouses, &c., together with town matter and refuse, to accumulate about the windings and mud flats of the creek, which, when left exposed to the sun's rays, emitted a foul and dangerous odour, so much so, that persons travelling past were compelled to fly as it were from a pestilence. The unusual wet season has, however, removed a deal of filth. At the same time, it only remains for a return of dry weather to set in, when the public health will assuredly be assailed.

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J. Myers, Esq. 7 Mar., 1890.

357. *Mr. Trickett.*] Which do you think would be desirable, a high-level bridge over the railway, or a level bridge starting near the present one? I never knew what sort of a bridge it was to be until this morning. I was surprised to think it should be a low-level bridge at any time. Any one who stands at the corner where the Bullock Island bridge crosses the line will say that it ought to be a high-level bridge.
358. I was always under the impression it was to be a high-level bridge. Was that the general impression? I believe it was.
359. Would the construction of this bridge be any advantage to your municipality? As a bridge, no. It is simply to get an opening.
360. All your traffic comes now by direct road to Newcastle? Yes, independent of the water.
361. You know the Carrington Municipality, and the Island as well? Yes.
362. Do you not think that if this expensive structure is to be erected it will be absolutely necessary in the meantime to erect a good temporary bridge? There should certainly be some way of getting across. I fail to see any obstruction to the commencing of the erection of a big bridge. They could go down with the cylinders, and reclaim after the cylinders are in.
363. But even if that were done it would take three years to erect the bridge, and in the meantime something is necessary to keep up communication? Yes.
364. And there must be a repairing of the present bridge or the construction of a temporary one? Something must be done.

Thomas Bibby, Esq., timber merchant, sworn, and examined:—

T. Bibby, Esq. 7 Mar., 1890.

365. *Mr. Trickett.*] What are you? A timber merchant.
366. Where do you reside? Wickham.
367. How long have you resided there? Five years.
368. You are well acquainted with the district and its requirements? I am.
369. You know all about the question of connecting Carrington with Newcastle by bridge? I do.
370. Will you give us your views on the subject as it effects Wickham? The population of Wickham, of course, are desirous of having a large bridge built with an opening, so that craft would be able to get through to take merchandise, timber, &c., up to Wickham. At present we have no wharfage accommodation at all. If I get a cargo of timber from New Zealand, or any where else, I have to go to Captain Patten's office to sign a document to the effect that I will remove it as it comes out of the ship. There is not room at present for more than two or three small timber crafts. It is very necessary that we should have better accommodation. We have been told that certain plans have been approved of by the Government, and that we were to have a wharf extending as far as Honeysuckle Point.
371. Is that beyond Wickham? No, it is on this side of Wickham, on a line with Wickham. We were told that we were to get this bridge with an opening, and that a large portion of land was to be reclaimed along by the railway line, and that wharves would be built to which we could take our small craft, and land our timber, so that we would not be hunted about from pillar to post as we have been for the last five years.
372. To what point was this reclamation promised? I do not know that it was promised at all, I was only told so. We were told by some of our members that it was to go past the railway station. We were told it was intended to dredge as far as the soap works, and that the wharves were to be extended as far as Redmond's cordial works.
373. Would that be of great advantage to you? Yes, to all importers. We should have some accommodation then, whereas at present we have none.
374. Has everything to be carted up now? Yes, within the last year I have imported, in timber alone, 2,673,271 feet.
375. Of sawn timber? Yes, and 1,145 doors.
376. Is your place of business close to the water? Yes.
377. With a water frontage? It is close on the water. I am building a large mill at Wickham, and if this bridge is erected, and there is anything like a channel, I could come up close to the mill. I could import logs. I intend to import logs, and the mill is being built with the idea of cutting them up there.
378. Your idea in having the swing in the bridge is that sea-going vessels should come up to the wharves? I do not see why they should not.
379. Would you have any cartage from the Honeysuckle Station, or would that be close to your place of business? It would be very close. If we went to the Wickham wharves my cartage would be very little.
380. At present the only timber which can be taken up the creek is log timber? Yes, I have taken as much as 200,000 feet, in rafts, right up to Wickham.
381. Would this wharfage construction improve the value of property? There is no doubt about it.
382. Have you given any thought as to the necessity or character of the bridge under consideration? Yes.
383. Independent of the swing part of the question? Yes.
384. Will you tell us what you think should be done? I think the bridge is very desirable.
385. What character of bridge? A permanent bridge.
386. Starting from Blane-street? Yes; I should be in favour of a high-level bridge over the railway, starting from Blane-street. It is very necessary that the bridge should be a high-level one, seeing that the railway traffic is so very great.
387. You know that certain reclamation works are contemplated in the creek? Yes.
388. Do you think those works should be carried out before the bridge is commenced? I think they should be commenced together.
389. You think they could be commenced together? I do think they could; I know they could, and I think they should.
390. There would be no difficulty in erecting the swing-bridge you speak of, so that the two works should be carried on together? No.
391. Have you thought how long the works would take to carry out? I think a bridge might be made in two years. I cannot say much about the reclamation.
392. Have you had any experience in bridge-building? Not personally, but I have seen them built. I have taken a great deal of notice of the Hawkesbury bridge, for instance.
393. What do you think of the present bridge over the creek between Newcastle and Carrington? I think it is unsafe.

394.

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T. Bibby, Esq. 7 Mar., 1890.

394. Do you think it could be repaired? I could not say. I have not examined it; but I have felt it shake and tremble whilst going over it. If I go over in a vehicle I like to go slow.
395. Even if a costly structure is erected, it will be necessary to repair the present bridge or build a temporary one? I should think something should be done to repair the bridge, and to put it in a safe condition during the time the other one is being erected.
396. *Mr. O'Sullivan.*] Where is the timber you import landed? On the Market Wharf.
397. That is a Government structure? Yes.
398. This wharf was constructed by the Government for the general commerce of Newcastle, other than coal? Yes.
399. Do you think it would be right to expect the Government to make a channel to Wickham to land cargoes which should be landed at the public wharves? I presume the Government would make their own wharves if they dredged the channel. At the Market Wharf we have no accommodation whatever.
400. You say you float your timber up? If it is large timber we have no other alternative.
401. Therefore, if you float it up in rafts, the cost of carriage cannot be very great? There is a large quantity of timber which will not float, and we must cart it.
402. How far is it from Wickham to the Market Wharf? About a mile and three-quarters or 2 miles.
403. But you are no worse off if you have only to go 2 miles with timber than a large number of builders and contractors in Sydney or Newtown and other suburbs? I think I am a great deal worse off. Most people in Sydney have every facility for landing timber, but here we have none.
404. Have you not a wharf at Wickham? No, I have not. There is one there.
405. Do you know how it was obtained? No, I do not.
406. Then you think it is highly desirable, in the interests of the people of Wickham, that this channel should be constructed and a wharf made there? I do. In doing this you will reclaim a large amount of land on both sides of the channel, and in my opinion it will more than compensate the Government for the work.
407. You think it would be a reproductive expenditure? I am quite sure of it.
408. You have said you think it would take two years to construct this bridge? If the material is to come from home I dare say it will, but if the material is in the colony I do not think it will take anything like that time.
409. In saying that you have in view the idea that the work will be let by contract, and not done on the Government stroke principle? I hope not. If it is done on the Government stroke principle, I am afraid it will take a little longer.
410. Would you advise that the old bridge should be patched up, or a temporary bridge constructed, whilst the iron bridge is being erected? I do not think that is a fair question to put to me, because I am not an engineer.
411. I only ask you as a taxpayer who will have to bear a portion of the cost? If the engineers say that it will be more saving to repair this bridge, by all means have it repaired. If you are going to give us a temporary bridge let it be as temporary as possible. I should not propose expending any great sum of money on a temporary bridge, if we are going to have the bridge which has been proposed.

Henry Joseph Brown, Esq., solicitor, sworn, and examined:—

H. J. Brown, Esq. 7 Mar., 1890.

412. *Mr. Trickett.*] You are a solicitor? Yes.
413. And an old resident of this district? Yes.
414. Do you hold any civic office at the present time? No; I have never done so.
415. You know the subject of our inquiry? Yes; as to the advisability of constructing a bridge between Newcastle and Bullock Island.
416. Do you think it would be desirable, at the present time, to erect a low-level bridge or an overhead one? An overhead bridge would certainly be desirable, if it could be constructed with convenient gradients of approach.
417. That would be a bridge starting from Blane-street? Yes; I think an overhead bridge would be highly desirable. The inconvenience to traffic caused by the shunting of trains is very great. I know of one company which has its office some little distance away, and the shunting of the trains is a perfect nuisance to them. It is also a source of danger.
418. There appears, recently, to have been some indignation in Newcastle at the prospect of a temporary bridge being erected to connect Newcastle with Bullock Island? Can you give us the particulars of that agitation. Were you at the public meeting? No, I was otherwise engaged.
419. As a public man, knowing something of the opinions of the people;—what is the real reason of the agitation? The idea was that if a temporary structure were put up the construction of a permanent one would be indefinitely postponed.
420. Are you aware whether this costly bridge over the crossing has been promised from time to time by the Government? I cannot say I know much about it, I have heard of it.
421. Do you know anything about the reclamation works there? I know there are works of great importance being carried on with the view partly of reclamation and partly of excavation.
422. Do you think they are desirable works? I think so.
423. With what object? I may say they are desirable from a sanitary point of view. These low mud flats, even with a few inhabitants upon them, must be very hurtful, but when there is a large number of people about them they will become the receptacle of filth of all kinds, and they are likely to breed pestilence.
424. What other advantage will the reclamation give? It will give further accommodation for shipping. The trade is increasing very rapidly, and would increase more rapidly if the present regulations for shipping coal were altered. It will also give a large area of land of great value.
425. Do you think the proposed basin is a suitable place for such costly works? I think so. I should, myself, have thought it better to have carried them to the west of the Bullock Island Bridge, along the Newcastle side. That is apparently part of the present scheme, or it might ultimately be worked in with it.
426. That would carry the reclamation and the deepening of the creek more to the west? Yes.
427. Do the people of Wickham suffer any inconvenience by not having wharfage accommodation nearer to them? I have no doubt about it, and I think as a matter of justice to the water-frontage owners, something should be done. The water-frontage land was originally sold by the Crown by the acre. I know

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H. J. Brown, Esq.
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know this professionally, but as usual in those days, and without knowledge on the part of the purchaser, the usual reserve of 100 feet from high-water was included improperly in the grant. The result has been that recently a large number of property holders, who had paid for their land, have had to pay the Government again for it, and that on the presumption that they had a water-frontage.

428. *Chairman.*] What proportion of these have been purchased? A good many that I know of. Some within the last year or two.

429. Out of 1,000 feet how many feet do you think have been purchased? I am not prepared to say. I know that one client of mine paid £2,000.

430. For the purpose of getting back what he had already paid for? He bought the whole of the land, but the Government who prepared the deed erroneously inserted a condition.

431. Do you mean that different terms were inserted in the grant to those named at the auction mart? Yes.

432. *Mr. Trickett.*] The greater part of the coaling takes place at Carrington? Yes, practically the whole of it, with the exception of that of some special companies, such as the A. Company, and the Waratah Company.

433. Is the wharfage accommodation at the foot of the town ample for loading purposes? There is not enough of it for present requirements.

434. What business is carried on there, seeing that the coal is loaded further up the river? There is a large timber traffic. There are direct shipments from England. There is also a good deal of wool laden there, and cattle are frequently exported, besides passenger and other traffic exists to a very considerable extent.

435. And that kind of traffic usurps, so to speak, the whole of the old wharfage? Yes, and there is considerable delay in many instances for want of more accommodation.

436. And you think this proposed reclamation would be of great advantage to the port generally? It will be of great advantage to the port generally, and to the Government as property-owners.

437. And it would be availed of directly it was constructed? No doubt.

438. If the accommodation for shiploading were doubled at the present time, do you think a sufficient number of ships would come to take up the tonnage? I think so. At all events it would be the case in a very short time.

439. Is the population of Newcastle increasing year by year? Very much. When I first came here, thirty years ago, the population of the whole district could not have been more than 6,000 or 7,000, and now it is between 60,000 and 70,000.

440. Have you also seen the rapid growth of Carrington? Yes; twenty years ago half-acre allotments were sold for not more than £20. Now many of them must be worth £2,000 an acre.

441. If this costly bridge is constructed, to connect Carrington with Newcastle, what will be the best thing to do in the meantime to keep up communication? Of course that would depend on whether a practical man would say it would be better to repair or strengthen the present structure. Of course it might be strengthened, even if it could not be repaired.

442. But something must be done—either the present structure must be strengthened, or a new temporary bridge erected? Yes.

443. Even if the costly structure is to be carried out? That, undoubtedly, would have to be done. At the same time I do not think there is any reason for postponing the erection of the new bridge. The bridge ought to be very strong, judging from what I have noticed of the nature of the traffic which would go over it, and a temporary bridge would not be strong enough.

444. *Chairman.*] I understood you to say that the feeling of Newcastle against a temporary bridge is lest it should not be temporary enough, but should be too durable? Practically that.

445. But is not that fear groundless, from the fact that the project at present is for a high-level bridge across the reclamation, which is to go to the Railway Department. If that reclamation is made, and comes into use as a shunting-yard, is it not certain that you must have a high-level bridge over it? I do not know exactly what is proposed to be done. The authority to make the new bridge should not be delayed till the temporary structure is worn out, otherwise at some time there would be no bridge at all.

446. It is proposed to reclaim certain ground, and to turn it into a shunting-yard, in which case a high-level bridge must go over it. Therefore the fear of the Newcastle people, that the temporary bridge would last too long, must be groundless? When this reclamation work is completed, we may have to wait a number of years before we get the vote for the new bridge.

447. Do you think that it is at all likely? Yes, I think so, from past experience. For many years we were promised a new Court-house, and tenders are about to be accepted for one which is too small for the purposes required of it.

448. With regard to the Wickham frontage, you have informed us that part of it is still a Government frontage? Yes.

449. And part of it has recently been repurchased under the Land Act? Yes.

450. Are you of opinion that it would pay the Government to buy back what it has sold between Hannell-street and the water, and make a public wharf on that side? No doubt a public wharf here and there is required; but I think it would be to the advantage of the community if certain portions of the water-frontage were in private hands.

451. But where it is close to the railway, and where it is necessary that the portion which is to be utilized requires the expenditure of a large amount of public money, do you not think, in a case like that, a resumption would be to the advantage of the public? I think so.

452. There is all the frontage to Throsby Creek north of the railway-bridge which would be available for private use, if the Government thought fit to sell it? Yes; that would be rather high up.

453. But do not you think it would be impolitic on the part of the Government to spend a large sum to deepen Throsby Creek, and so make this a wharf for seagoing ships, simply for the purpose of adding threefold to the value of private property? Undoubtedly; but under existing circumstances some deepening ought to take place, so that those who bought land with water-frontages a second time should be able to use them to some extent. But if a large expenditure is made, to fit it for seagoing vessels, I think more would be done than the purchasers would have a right to expect, and they could not complain if the land were resumed.

454. But you know the Government sold this land with the existing water-frontage as it was? Yes.

455. And that is mud at low water and 4 feet at high water? Yes. 456.

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456. If the Government is going to turn that into a frontage for seagoing ships it will add enormously to the value of the property? Exactly.
457. Then do not you think the Government should receive a *quid pro quo?* Yes.
458. Do you think the Government is entitled to spend citizens' money in adding threefold to a private person's property, when it could buy the property first, make the improvement, and come in for the benefit of its own expenditure? No; but considering that the people have had to pay twice over for their land, something in the way of giving them water-frontage should be done. At the same time, if the excavation makes the place fit for seagoing vessels, you will do more than the owners have a right to expect. When the improvements are completed, the Government should sell what is not required for public purposes, as experience shows private enterprise would utilize the rest to a greater extent than the Government would.
459. You think it would be advisable before deepening Throsby Creek to resume that frontage? It depends on the extent to which it is proposed to be deepened.
460. And if they resume that and make it fit for seagoing ships, it will be an immense addition to the value of the harbour of Newcastle? Undoubtedly. This small deepening I speak of, for the benefit of property-holders, is also necessary for sanitary purposes.
461. But the Government has it in its power to make this improvement and recoup itself of the cost? No doubt.
462. And you think it would be better to do that than throw the property into private hands? Yes, if it were considered desirable to make a deep channel.
463. *Mr. O'Sullivan.*] Do you think, if this bridge were constructed, and the reclamation works and channel carried out at an expense of £130,000, the Government would get a return for that expenditure in the shape of the lands they would have to sell at Bullock Island? They would get a return in a variety of ways. The land at present belonging to the Government would be greatly increased in value. They would get a large return for the use of the cranes or other appliances at the wharf.
464. But would the land reclaimed on the Bullock Island side be more in value than the expenditure upon it? That would depend on the amount of reclamation and the position of the land. I have no doubt the Government would be in pocket by making a large expenditure there.
465. And you think that, though it may seem a large expenditure, it may be a wise one in the end for the Government to incur? I have no doubt about it. For instance, the net revenue from eight or nine cranes only would certainly be over £20,000 a year, supposing they were constantly going. The seven steam cranes which used to be on the wharf on this side used to produce £15,000 net at the least.
466. *Chairman.*] Do you think it would be fair to Newcastle to put on tonnage dues to pay the interest on this expenditure? Certainly not, because, practically, this is money belonging to the port.
467. How? Because the difficulty in getting things done here is not a recent one. Tonnage dues were imposed thirty years ago to make improvements. A considerable sum was raised from them, and under the Act money was borrowed. The Act provided that all moneys raised by means of the dues should be paid into separate accounts; instead of that they were paid into Government accounts. The works which were produced from the tonnage dues and the money borrowed were so enormously profitable that they paid off the debt and enabled more works to be constructed. These again yielded a large revenue, and if an account were properly taken it would be found that there is a large sum to our credit.
468. But did not the tonnage dues at that time clear off the debt, principal and interest, about the time Mr. Lloyd moved for their abolition? I should think so.
469. Since then the debt has been enormously increased, and there have been no tonnage dues? Yes, but the works have been increased, and have been still more profitable, and have more than paid for themselves.
470. But do you mean to say the money received from these cranes will pay off the interest on all the public money spent here? Yes; and repay the principal as well.
471. Have you gone into the figures? I went into the matter some time ago, and came to the conclusion that there must be a large sum due to Newcastle.
472. That is only an opinion? Yes. I must also point out that when the tonnage dues were stopped other dues were put on in their place, and a considerable sum is received for pilotage and for other purposes.
473. Does the sum received for pilotage more than cover the cost of the service? Yes.
474. Does the money received from the wharf more than cover the cost of the depreciation of the wharf? I do not know, positively, what the difference is between the gross and net earnings.
475. You would not like to commit yourself? No.
476. *Mr. Hurley.*] You say you think there is a credit due to Newcastle? Yes.
477. From that I suppose you intend to convey that Newcastle has been somewhat neglected, compared with other portions of the country? I do not think there can be much doubt about that.
478. Are you aware that the Government proposes to spend £112,000 upon one work alone in Newcastle? No; what work is that.
479. In the reclamation? Yes; but that is not for the benefit of Newcastle, but for the benefit of the Government in improving land which would otherwise be valueless.
480. The improvement of the land is surely an improvement for the people of Newcastle? Yes; but it will be an improvement for the Government revenue when they sell the land.
481. Will not the erection of seven more cranes be an advantage? Undoubtedly, and it will also be an advantage for the Government in increasing the revenue.
482. How, then, can you say there has been any neglect on the part of the Government, or that there is a credit balance, as it were, due to you now? I may mention one fact which has been brought to my knowledge to-day. A vessel came in, the draught of which ought certainly not to have been too much for this port; but, as it was, she took the ground, and remained there for a few hours. If there had been a proper expenditure this would not have happened.
483. Do not you think the abolition of harbour dues was a great concession to the port? The abolition of tonnage dues was an act of justice. You are under a mistake. The harbour dues have not been done away with. At the time the harbour dues were imposed there were tonnage dues as well, and none in Sydney. The abolition of these tonnage dues put us in one respect in the same position as Sydney was. I have just had placed in my hands some information which the Committee might like to have. In 1879, the revenue of Newcastle was £57,477; and in 1889 it was £132,000. 484.

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H. J. Brown, Esq. 7 Mar., 1890.

484. Have you any idea as to the export of coal from Newcastle? I believe nearly 2,000,000 tons.
485. And you think it is likely to increase? I think so. It would have increased long ago if we had had better regulations.
486. You think, for the want of accommodation, ships have been forced to take their cargo elsewhere? There is no doubt of that, and the accommodation which exists is not used to the best advantage, owing to the nature of the regulations.
487. Are you of opinion that the work in connection with the wharves would be more satisfactorily carried out by a Board of Trust? That would depend to a considerable extent on whom were appointed, and the extent of the endowment. If they had to impose fresh dues to carry on, the Trust would be an injury to the port.
488. *Mr. O'Sullivan.*] You have given us figures showing a large increase in the revenue in the port of Newcastle? Yes. In 1889 the sum of £103,000 was derived from haulage and shipping—that is to say, haulage from the various mines. A minimum of 10d. a ton is charged upon all coal brought from the mines.
489. *Chairman.*] That refers to the railway service mostly? Yes; but these are railway works.
490. But you are crediting Newcastle with revenue from railway works,—you are crediting the railway with nothing? This is what has been paid to the Railway Department practically for the use of the wharf, which is a railway yard; all the wharves belong to that department.
491. It was for the use of carriage as well as the wharf? Only the carriage from the pits, along private railways, principally.
492. Not all? Part of it, of course, is public.
493. *Mr. O'Sullivan.*] Can you give the figures indicating the revenue derived from the use of the cranes? The Government charges 10d. a ton for the use of the locomotive from the pit to the wharf, and dropping the coal by means of cranes into the ships.
494. Then you are unable to separate the railway figures from the crane figures? It is all in one sum, as the cranes belong to the Railway Department, and their earnings are included in the railway revenue.

James Curley, Esq., M.P., sworn, and examined:—

J. Curley, Esq., M.P. 7 Mar., 1890.

495. *Mr. Hurley.*] You are one of the representatives of Newcastle? I am.
496. Have you been long in the district? For something like fifteen years.
497. You are conversant with the subject matter before the Committee? Yes.
498. Can you give us an opinion in regard to the necessity for a bridge, and as to what character of bridge would be suitable for the future requirements of Newcastle? Before going into the matter I would like to refer to certain figures to show the importance of the port, and the progress which has been made. I have obtained certain statistics from official sources. The revenue collected in 1879 was £57,477 18s. 9d., and in 1889 it was £132,018 0s. 1d. The total value of exports, including coal, to foreign and intercolonial ports in 1879 was £648,427. The total value in 1889 was £1,894,321. The railway revenue for haulage and shipping in 1879 was £76,602.
499. But are you crediting Newcastle with that amount of money as being receivable through Newcastle? This is simply haulage and shipping from the coal mines, that is the item of £76,602.
500. It is purely in reference to coal? Yes. In 1889 the revenue for haulage and shipping was £103,824. The shipments in regard to foreign and intercolonial exports were, in 1879, 830,675 tons, and in 1889, 2,091,557 tons. I mention these figures simply to show the expansion of the trade, and what may be anticipated in the future.
501. What year did you quote from last? I am making a contrast between 1879 and 1889.
502. And what does it average? 2,091,557 tons for last year.
503. We have it in previous evidence that the exact figures are 1,658,386 tons of coal? If that is so there must be some mistake, because I got my figures from the Collector of Customs this morning.
504. Do you think that Captain Newton's evidence on oath would be accurately given? I can verify my statement by again referring to the customs officer.
505. What is your object in referring to the question of imports and exports, and the traffic of the railway department, as we are met to discuss the necessity of the construction of a bridge to Bullock Island. I suppose you merely quote the figures to show the importance of the place? To show the importance of the reclamation works being carried on and so forth.
506. And you believe that the works foreshadowed by the Works Department—the reclamation of certain land, and the erection of new cranes—is a necessity? I do.
507. And the construction of a bridge to connect Newcastle with Bullock Island is also a necessity? Yes.
508. You have visited the bridge which connects Newcastle with Bullock Island? I have.
509. What is your opinion of it? I consider it is both unsuitable and dangerous.
510. You have heard the evidence in reference to a high-level and a low-level bridge, and the project the Railway Commissioners have in view of reclaiming a certain area of land, in order to avoid the crossing of the line by persons proceeding from Carrington to Newcastle? Yes.
511. Can you give us your opinion in regard to that matter? A high-level bridge may have its advantages, and a low-level bridge may have its advantages as well, because if you reclaim this ground going towards Wickham, and it is made a public wharf, you may, perhaps, have heavy goods landed there which you would require to get away to Carrington over this bridge. If it were a high-level bridge we might not be able to get over it, unless you had a crane to lift the goods up.
512. *Chairman.*] Could not they go over the Wickham bridge? They could go over the other way, but if this bridge were a low-level bridge they could take the goods off the wharf at once.
513. You are speaking of an exceptional case, when a very heavy load might be required to be taken to Carrington? I am looking well into the future.
514. Could not there be heavy loading at the Carrington wharf. Why load goods on the Wickham wharf, and take them over the bridge? I have no doubt, as far as appearances go at present, that a high-level bridge will be the best.
515. Very heavy girders could be landed by the cranes at Carrington wharf more easily than they could be carried by the road over the bridge? Possibly the difficulty might be met in that way.
516. *Mr. Hurley.*] I suppose you recognize the fact that an overhead bridge would afford greater safety for the public, and that it will also give facilities to steamers travelling to Wickham, which a low-level bridge would not give? Yes.

517.

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J. Curley, Esq., M.P. 7 Mar., 1890.

517. And that it would also be a greater convenience to the Railway Department generally, if they had no low-levels to contend with? I conceive that you must have a low-level crossing somewhere, or how can the people get to the wharf with the goods.
518. But as far as the people of Carrington are concerned, you have sufficient wharf accommodation on this side already, for the purposes of the merchandize of the city? With regard to the merchandize of the city, I suppose the people have to come here over the bridge, and go down to town with it.
519. But surely you do not anticipate a wharf alongside every man's dwelling? Certainly not.
520. Looking at the convenience it would be for the Railway Department, and the safety it would afford to the general public, do you not think an overhead bridge would be the best and most suitable? I daresay it would.
521. Have you formed any estimate as to the improved value of land through the construction of a first-class high-level bridge to connect Carrington with Newcastle? I suppose that would take in the reclamation of the land there. I think it would double the present value of land.
522. Do you think the people of Carrington have cause for complaint of the negligence of the Government in not providing suitable accommodation to enable them to reach their holdings at Carrington? I do not think it is the people of Carrington alone, but the general public around who have cause for complaint.
523. *Mr. O'Sullivan.*] I understand you prefer to have an iron bridge constructed instead of the temporary wooden bridge? You must either repair the present bridge or put up some kind of expedient in its place. I should say that the present bridge ought to be inspected for the purpose of ascertaining whether it can be repaired for a year or two or not.
524. You know that the departmental officers have condemned the bridge, so much that they had issued an order that no loads above three tons in weight shall cross? Yes.
525. That being so, it is no good relying on the old bridge much longer for traffic of that kind? No.
526. Then you think an iron bridge should be constructed? I think it should be commenced as soon as possible.
527. In the mean time would you suggest the construction of a temporary bridge? I certainly would, if the old one cannot be repaired.
528. What renders it absolutely necessary that a strong iron bridge should be constructed to Bullock Island;—what heavy freights are there beyond those coming from Morison's establishment, and which often go by the Wickham bridge? Occasionally, heavy building material goes over the bridges.
529. I suppose that will go in drays? Yes.
530. A dray will not carry much more than 2 or 3 tons. Therefore the loading would not be very weighty so far as building material is concerned? It is possible that boilers which may be landed at Bullock Island may be brought from there.
531. You mean for the mines? Yes.
532. Would they not be likely to take the Wickham bridge instead of the one proposed? That would depend upon where they wanted to get to.
533. Would not the majority of the mines be served by the Wickham bridge? Some would and others would not.
534. Is it not a dread amongst the people that if a temporary bridge is constructed, the construction of the iron bridge may be indefinitely postponed? I believe that is one of the reasons assigned by the public.
535. And you think a bird in the hand is worth two in the bush? Yes.
536. And that it is much better to insist on the Government carrying out their promise to construct an iron bridge? Yes; the public think that it is a desirable work, and that it should be done at once.
537. And you think an iron bridge is absolutely necessary for the heavy freights which go to and from Carrington? Yes; and also for the purpose of getting on with the reclamation. If a swing bridge is put up a dredge could be utilised for the purposes of reclamation.
538. That is another reason why you desire the work pushed on? Yes.
539. You think that if a wooden structure is put up, no dredge could be used, and that the channel will not be used for some years in consequence? Yes.
540. That sways you in preferring to have the iron bridge constructed without delay? Yes.

A. Sheddon, Esq. 7 Mar., 1890.

Alexander Sheddon, Esq., sworn, and examined:—

541. *Mr. Trickett.*] You are an alderman in the city of Newcastle? Yes.
542. Have you lived here long? I have been fully twenty years here.
543. And you have taken an active part in public affairs? I have.
544. And you have noted the advance and the requirements of the city? Yes.
545. You know the matter under consideration? Yes.
546. Were you present at a public meeting held here recently? I was.
547. Can you tell us what was the feeling on that occasion in regard to the proposal not to construct this expensive bridge from Newcastle to Bullock Island? It was really thought that the construction of what we may call the permanent bridge was about to be shelved by the Government. We lost no time in calling a public meeting to ascertain the feelings of the people.
548. And the result was that the people thought an expensive structure should be constructed? Yes. It had long been promised. I held a seat in the Wickham Council up to the last term, and I can say that promises of that kind had been held out to us for two years.
549. If this permanent structure is erected, it will be necessary to take some immediate steps either to repair the old bridge or to put up a temporary one? I did not know that the present bridge had been condemned; but if it is only to serve for a moderate time until the permanent structure is built, I cannot see why, at a slight expense, it cannot be strengthened so as to enable traffic to pass ever.
550. Have you thought what expense would be required to make it answer the necessary purposes for a year or two? Not myself, but I have heard a great deal from others—men holding good positions—who understand the work, and they say it would cost from £1,000 to £1,500. To find out it would have to be examined properly. If I were to examine it I could tell you exactly. 551.

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A. Sheddon, Esq. 7 Mar., 1890.

551. Do you think the Government would be justified in spending £50,000 in the construction of a bridge from Blane-street over to Carrington? I am sure they would.
552. What makes you think that? Because of the importance of the two places. They have grown very rapidly during the last few years. Seeing that the Government is about to reclaim the foreshores, there is no doubt that if they were to sell the land it would far more than recoup them.
553. What is the interchange between Newcastle and Carrington which makes such a permanent structure necessary? We say that when you build anything you should build a good thing. It is most profitable to build a good, firm structure.
554. But is it necessary to go to this large expense? No doubt the Railway Commissioners see the benefit of a high-level bridge.
555. And you think such a bridge would be desirable? There is no doubt of it, because the two places will, in a manner of speaking, be one town in a very short time. I look upon it that there is only the matter of a bridge between the two places. If the land is reclaimed and sold you will see that buildings will go up to the bridge on both sides.
556. Do the supplies of Carrington go from Newcastle, or are they mostly landed at Carrington? They are mostly landed from Newcastle.
557. And taken over the bridge? Yes; I do not think there is accommodation for taking goods to Carrington by water.
558. Have you had any experience in bridge building? I have?
559. What time do you think it would take to construct an overhead bridge from Blane-street to where it is proposed to take it? About three years from the acceptance of the tender.
560. If ordinary expedition is exercised the bridge can be used in three years? Yes.
561. Meanwhile, the present bridge must be repaired, or a new structure put up? I hold it would be be better to spend more money to make the present one safe. It could easily be done. It never was a strong bridge.
562. It has lasted a great number of years? Yes, 15 or 16 years.
563. Could you tell us what it cost? I could not.
564. Have you ever heard that it only cost £600 or £700? No.
564½. Has there ever been an accident on the bridge? Not to my knowledge.
565. Or a blockage of traffic? The bridge is narrow. One vehicle has to stand while the other passes.
566. It is only 16 feet wide at present? About that.

James Frank Ellis, Esq., timber merchant, sworn, and examined:—

J. F. Ellis, Esq. 7 Mar., 1890.

567. *Mr. Trickett.*] In what business are you? I am a timber merchant.
568. Have you any evidence to give in addition to what has already been given? I believe the previous witnesses have been under a disadvantage, because they were not fully acquainted with the circumstances of the case. They are not fully acquainted with the circumstances connected with the £112,000 vote which has been placed on the estimates.
569. The question before is as to the expediency of building this bridge immediately or not? That, I believe, is part of the £112,000 vote. I could give evidence as to how the money should be expended in erecting the iron bridge proposed, instead of a temporary one.
570. You mean the high-level bridge? Yes.
571. Give the reason? I think the bridge should be erected immediately, because there are certain works proposed to be carried out in regard to reclamation, &c., in connection with Throsby Creek. That is on the western side of the present bridge. I believe the public would be willing that the traffic should go over the Wickham bridge until the permanent one is erected.
572. I understand you to say your principal reason for a high-level bridge with a swing is the urgency of improving the Wickham water frontage? Not necessarily so, but it has something to do with it, because the proposed reclamation works will more than recoup the Government for its expenditure on this new bridge. The old bridge has stood requirements for the last sixteen years, and for the last three or four years no heavy traffic has gone over it. I maintain that the public would sooner be put to the inconvenience of running their traffic over the Wickham bridge, than that a temporary bridge should be erected.
573. Do you not think the public themselves are the judges of their own convenience? I should imagine so, but they have been put to an inconvenience because they have not seen a plan of the Government proposal.
574. The evidence hitherto has been to the effect that they would rather have a temporary bridge than none at all. You were saying they would rather have no bridge than a temporary one? They say so, because they have not been put in possession of the proposals of the Government. I maintain that the population would sooner be put to the inconvenience of running their traffic over the Wickham bridge, and have a permanent bridge erected, than have a temporary structure put up.
575. And that is the statement you wish to make? Exactly.
576. You bring all your timber over the Wickham bridge and down Hannell-street. Where do you land your timber from the ships? I deliver it at Newcastle.
577. At the Government wharf? Yes. If I could get my vessels to Wickham with logs, it would pay me better to cut up my own logs than import the sawn timber as I do now. At the same time, I do not look upon this as a personal matter, but from a public point of view.
578. It is for the sake of improving the Wickham frontage that you wish to see the swing-bridge made? To a certain extent. I think if these reclamation works were carried out, the Government would be recouped ten-fold.

George William Webb, Esq., sworn, and examined:—

G. W. Webb, Esq. 7 Mar., 1890.

579. *Mr. Trickett.*] You are an alderman for the city of Newcastle, and an ex-mayor? Yes.
580. How long have you been living in Newcastle? All my lifetime, close upon forty years.
581. You know the subject of inquiry? Yes.
582. What are your views in respect of the matter? I was cognizant of the plan which was laid down by the Government during the time I occupied the position of mayor, that was in 1889. The

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G. W. Webb, Esq. 7 Mar., 1890.

The old bridge is certainly not fit for heavy traffic, and has been condemned for some considerable time. My opinion is that the Government ought to resume the land on the south side, in a direct line with the A. A. Co.'s wharf, as far as Throsby Creek, a width of 300 feet, and the inner line with Union-street. I have been over the old bridge several times, and it rocks about a good deal. My opinion, as a practical man in the building trade, is that if a few piles were driven in, the bridge would serve while the new one is being built. I know a good many bridges which have been built, and I think the whole of the work could be done in three years, more especially if the Government were to start on the south side.

583. That is on the Newcastle side? Yes. It will be a waste of money to spend £1,500 on that old bridge. If piles were put in to strengthen it, it would last two or three years while the new bridge is being built. By reclaiming the land the Government will reap great advantage. The sale of the land will recoup them for all they lay out upon it. Land in Blane-street is at present worth £40 or £50 a foot.

584. Near the site of the proposed bridge? Yes, and it is increasing in value every day. The population of the district is increasing every day, and the coal traffic is also increasing. We have had a slack time, and that has been not only on account of the strike but on the account of the scarcity of shipping, but at the present time, however, there are a large number of orders for coal in hand, and we cannot get the shipping to take it away.

585. Do you approve of a high-level bridge from Blane-street? I do.

586. Do you think there would be any difficulty in getting an easy gradient? No, if my memory serves me correctly, you have a gradient of 1 in 25 from the Newcastle side.

587. Would a gradient of 1 in 25 be an obstacle to heavy traffic? Certainly not.

588. Do you think the future traffic between Newcastle and Carrington would justify such a large expenditure as £50,000 upon a bridge? I do; the more cranes there are started in the Carrington direction the more traffic there will be.

589. You say you have seen the rapid growth of Carrington? I have, it has been something wonderful. The lower end of Newcastle has also grown wonderfully during the last two years.

590. That is at the lower end and in the vicinity of the bridge? Yes; in the part I live in there were seven years back only two houses, now there is not a piece of vacant land in the place.

591. What is to make Carrington become a large population, seeing that the land is low-lying, and that it is at present almost under water? People are going there in large numbers, they are filling in the land, and it is becoming very valuable there.

592. There is no obstacle to people living there? Not the slightest.

593. Has it proved to be an unhealthy place to live in? It is no more unhealthy than any other place about Newcastle. There are very few deaths over there.

594. And its low-lying character does not make it unhealthy? Not to a great extent. I presume there is sickness over there.

595. Is your opinion in regard to the repair of the old bridge a practical one? The bridge has been condemned for three or four years. There has been no heavy traffic over it, and it is no worse now than it was then.

596. But that is by reason of the heavy traffic having been stopped? Certainly, and the traffic has gone the other way through Wickham.

597. Has there been much cause of complaint by reason of the traffic having to go through Wickham? Certainly. All heavy traffic must go round or be punted across to Bullock Island.

598. That is a serious inconvenience? Yes.

599. *Chairman.*] What is the extra distance if you go round, say from the foundry? It will make a good mile difference.

J. F. Ellis, Esq. 7 Mar., 1890.

James Frank Ellis, Esq., sworn, made a further statement, as follows:—"Of course the value of the frontages at Throsby Creek has a lot to do with the voting of the money by the Government for the proposed improvements. I have just come into possession of a property in Wickham. It has recently been leased to me. The property is worth £20 a foot to Hannell-street. The late owner of the mill bought the reclamation right of the frontage to the creek from the Government, and paid over £2,000 for that property, and there being 100 feet frontage, more or less, gives a valuation of £20 per foot to the water frontage.

Mr. Joseph Henry Collier, land agent, sworn and examined:—

Mr. J. H. Collier. 7 Mar., 1890.

600. *Mr. O'Sullivan.*] What is your business? A land agent.

601. Do you desire to make any statement in regard to the proposal under consideration? I would like to point out that the Government owns a large amount of land about Bullock Island, and by so doing they deprive the Carrington Council of a large amount of rates, and retard the improvement of the place. If they carry out the work of building the bridge, and reclaiming the land, it will be at least some compensation for the amount of rates of which the people of Carrington are deprived. This applies not only to the Carrington, but the City Council. The Government have all the frontage to Blane-street, and the amount of rates the Council is deprived of, is rather more than £1,500 a year—£2,000. Three years ago the side of Blane-street, occupied by private individuals, yielded a rate of £1,500 a year.

602. How is the Council deprived of these rates? Do you mean that they would get the rates if the land were private land? Yes; by the land being kept as it is at present, without being improved, the local Councils are deprived of a large amount of rates. The erection of the bridge, and the reclamation of the land, will compensate them, to some extent, for the large amount of rates of which they are now deprived.

603. Is communication ever cut off from Bullock Island by floods? The water runs over the approaches to the Wickham bridge.

604. Does it cover the roadway? Yes.

605. Is there any traffic across whilst the roadway is covered? Yes; any traffic which possibly can go, goes through the water.

606. Do the people suffer much inconvenience? Of course you cannot go across on foot.

607. And you think that would be a reason why a high-level bridge should be constructed through Carrington? This does not apply to the bridge in question. I am speaking of the Wickham bridge.

608. Traffic by the old bridge is not cut off by floods? No.

609.

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Mr. J. H. Collier. 7 Mar., 1890.

609. Do you desire to make any other statement? I may point out that the population has grown enormously. The bridge should be a permanent one. It should not stand merely for ten or twenty years, but should stand for 100 or 200 years. The channel proposed to be bridged is about 400 feet wide, and 24 feet deep at low water. Therefore the bridge would have to be of a permanent and costly nature. It should carry a tramway, and should be a swing-bridge, so as to allow ships to pass through. On that account it ought to be a permanent and substantial structure.*

* NOTE (*on revision*) :—I am more than ever of the opinion that tenders should be called at once for the construction of the permanent bridge and the dredging out of the channel towards and above Wickham.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Bridge to connect Bullock Island with the Mainland at Newcastle.

APPENDIX.

A.

PRECIS OF PAPERS RELATING TO THE PROPOSED BRIDGE.

THE papers in this case, as they have been referred for *précis*—and inquiries for earlier papers have been fruitless,—enter on the subject in *Medias res*, nothing being shown of the circumstances which led up to the proposal to rebuild the bridge.

21/1/87.—The first paper on the file is a report from Mr. W. A. Smith, stating that he had made inquiry as to the cost of widening the road from Newcastle to Bullock Island Bridge from 20 feet to 40 feet, and that it could be done for £3,000.

25/2/87.—The same officer reported that the road was dangerously narrow, being on an embankment, and not fenced in, and that it could be metalled and patched up for £580.

24/8/87.—Mr. Ellis, M.P., forwarded to the Minister a letter which he had received from the Mayor of Newcastle, in which the latter stated that he had been informed that it was in contemplation to build a timber bridge, and that he thought an iron bridge was in every way preferable.

Mr. Ellis was informed that the bridge would be of iron, and that the idea of erecting a wooden bridge had never been entertained.

7/9/87.—Mr. Smith reported that he had ascertained that Harbours and Rivers did not propose to open up Throsby Creek from the New Bridge to Wickham Bridge. The depth of water was from 2 feet to 4 feet, and dredging would be expensive. The land along the frontage was becoming very valuable, and he anticipated objections from owners of property when it became known that the design of the bridge was such that the creek would be close to future navigation. Mr. Smith added that the approach on the Newcastle side would have to be widened to 40 feet.

20/9/87.—The Council Clerk, Wickham, referring to the proposed closing up of Throsby's Creek, wrote asking if it was proposed to make the bridge a drawbridge. There were, he said, numerous industries established within a short distance of the water, and other industrial establishments were in contemplation along the foreshores of the creek. It was, therefore, of vital importance that the navigation of this arm of the Hunter should not be intercepted by an impassable bridge. No action seems to have been taken on this remonstrance.

23/10/87.—Mr. Smith now submitted specification of the approaches to the proposed bridge, and there is also an unsigned and undated estimate—by whom prepared is not shown—of £13,681 13s. for a bridge.

For some months the papers do not record anything, but in March, 1888, a new feature was introduced. Mr. Smith submitted a plan for an extensive reclamation of land involving an alteration in the site of the proposed bridge. It is not necessary here to give details of the proposed reclamation, as they can be given separately if required, and it may suffice to say, that the scheme if carried out would result in creating an area of 45 or 50 acres of most valuable land now useless mud-flat, and in making a navigable channel of Throsby Creek, and enable the Railway Department moreover to utilize a valuable strip of land opposite Blane-street, said to be worth £67,000.

In reply to Mr. Bennett, Mr. Smith further reported that the scheme was originated by Mr. Scott, of Carrington, and that he had reported upon it because the question of the bridge and the road was so materially affected by it. He had proposed to increase the span of the bridge to 125 feet in order that cylinders might be sunk in the centre of the channel for the bridge to swing upon, with 50 feet openings. If, however, the scheme were only partially carried out an opening might not be required for fifteen or twenty years.

Mr. Bennett thought the papers should be referred for report to Harbours and Rivers and the Railway Department, and they were referred accordingly.

The Commissioner for Railways minuted that the Minister would remember that when they visited Newcastle together this reclamation had been decided upon, and as regarded the Blane-street frontages that the policy in the interests of Newcastle of disposing of them had been recognized, and directions had been given for the sale of some of them, and that tenders were to be invited for filling in the frontages to road level. The filling would cost 1s. 3d. a cubic yard, but perhaps the silt from the dredging might be used for this purpose.

Mr. Hickson considered that the scheme had many points to recommend it, and he thought all future work, such as the erection of the bridge, should be carried out with a view to the adoption of this scheme.

3/7/88.—The Under Secretary requested Mr. Hickson to report for the Minister's information with reference to a letter on the subject of the proposed land reclamation which had appeared in the *Evening Call*, and which had been handed to the Minister by Mr. Ellis, M.P., who warmly advocated the proposal. The letter referred to—from Mr. Jno. W. Scott,—urged the adoption of the reclamation scheme, and pointed out that every year 1,040,000 tons, or 780,000 cubic yards of silt were carried out to sea, and this was sufficient to reclaim, at an average depth at 4 feet, 120 acres of land; the cost of removing this silt being £17,333 per annum for simply throwing the material away. Mr. Scott proceeded to demonstrate the enormous gain to the country which would result from the adoption of this system of reclamation.

Mr. Hickson referred the Minister to Mr. Smith's report of March, 1888, and intimated that he had that day made a proposal to the Minister in connection with the proposed reclamation. The Roads Department he said should be moved with reference to the bridge over Throsby Creek, the position of which would have to be altered if the proposed scheme were carried out.

26/9/88.—Mr. M'Donald submitted statement of additional amount (£10,200) required for the bridge, and Mr. Bennett minuted in explanation that in consequence of the change of site, and the substitution of a movable for a fixed bridge this amount would be required in addition to the £7,500 already voted.

The amount was voted for the Loan Estimates.

6/11/88.—Mr. M'Donald submitted an amended Estimate (to suit greater width of channel) of £22,200, and the amount was duly noted.

9/4/89.—The Council Clerk drew attention to the unsafe condition of the existing bridge. The sum of £33,000 was placed on the Draft Loan Estimates for 1890, and the bridge was described as consisting of an iron or steel swing span with an opening on each side of 65 feet, roadway 28 feet wide footways to carry tramway. Swing worked by hydraulic power, Approach span of iron and deck throughout, iron covered with tarred metal. Piers iron and concrete sunk to rock.

The

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The bridge was referred by the House for the consideration and report of the Public Works Committee, but subsequently

10/2/90.—Mr. Hickson reported that he thought the erection of the large structure should be deferred pending a consideration of the question of the development of the shipping and railway traffic there. The swing-bridge to accommodate vehicle and tram traffic, crossing the Railway land at a high level and giving space for for vessels to pass up and down the creek, would cost £3,300, involving an annual charge of £1,800 to £2,200, and he was of opinion that a wooden bridge on present site, at a cost of £2,500, would meet all the requirements of the traffic for some years.

The Minister minuted to withdraw all the iron bridges except Cowra, and explain the change.

C.A.B., 16/2/90.

B.

MINUTE BY THE COMMISSIONER AND ENGINEER-IN-CHIEF FOR ROADS AND BRIDGES.

Bridges referred to Public Works Committee.

Sydney, 10 February, 1890.

WITH reference to the four bridges which it was proposed to refer to the Public Works Committee, I have the honor to state that the design for Cowra Bridge will be ready by Tuesday next.

With regard to Bullock Island Bridge, I am inclined to think the erection of the large structure should be deferred for the present pending a consideration of the whole question as to the future development of the shipping and railway traffic of this place. A swing-bridge, capable of accommodating vehicular and tram traffic, crossing over the Railway land at a high level, and leaving ample room for vessels passing up and down Throsby Creek channel, would cost about £33,000, the interest and working expenses of which would range from £1,800 to £2,200 per annum. A wooden bridge on site of present one would cost about £2,500, and would, I believe, meet all the requirements of the traffic for some years.

Jerry's Plains and Tarban Creek Bridges should also be withdrawn, as they can be erected for an amount under £20,000; and, in any case further investigation is necessary as to whether any expenditure at these places is justifiable.

ROBERT HICKSON.

WITHDRAW proposal for all the iron bridges but Cowra from Public Works Committee, and explain change of proposal from iron to composite, costing less than £20,000. Alter proposal *re* Cowra to composite at £26,537 cost.—B.S., 11/2/90.

C.

RESOLUTIONS PASSED AT A PUBLIC MEETING IN NEWCASTLE.

The Chairman of the Public Works Committee, Sydney.

Sir, Newcastle, 1 March, 1890.

I do myself the honor, on behalf of my colleagues, Messrs. Fletcher and Curley and myself, to transmit herewith resolutions arrived at in a large and enthusiastic public meeting held last night in this city, having reference to the construction of the Newcastle and Bullock Island Bridge, and I hand you under another cover a full report of the proceedings as reported in the local press. The decision of Mr. Hickson has come with great surprise to the citizens, and evidence will be tendered, if it is now admissible, to show the Committee that Mr. Hickson has not judged the opinions of the citizens rightly, and that the carrying out of the original structure to the Government themselves, in the increased value of their own land, will more than compensate for the expenditure.

I have, &c.,

ALEXANDER BROWN.

The Newcastle-Bullock Island Bridge—Proposed Temporary Structure.

The Mayor of Newcastle in the Chair.

Moved by Alderman Rodgers, seconded by Mr. H. E. Stokes, and supported by Mr. William Grahame, a resolution as follows:—"That, as in the opinion of this meeting, the erection of a temporary bridge to connect Newcastle and Carrington would be a waste of public money, and inadequate to the requirements of the district, we therefore protest against its erection."

Moved by Mr. J. H. Collier, seconded by Alderman Morrison, and supported by Mr. Alexander Brown, M.P.:—"That, in the opinion of this meeting, the necessities of public traffic and growing requirements of the district demand and warrant the erection of a substantial and commodious bridge. We therefore urge that the original plans should be adopted and carried out."

Moved by Mr. Blackiston, seconded by Dr. Morgan, and supported by Aldermen Sheddon and Lloyd:—"That the foregoing resolutions be conveyed to the Works Committee by the Members for the city and county."

Moved by Mr. Grahame, and seconded by Mr. Bibby:—"That the Mayors of Newcastle, Carrington, and Wickham proceed to Sydney, with such evidence as they desire fit, on Tuesday next, and give evidence before the Parliamentary Committee."

[Two plans.]

Sydney: Charles Potter, Government Printer.—1890.

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PLAN I.

— SKETCH PLAN —

Scale 500 Ft = 1in

— part colored red indicates new bridge — and abutment's

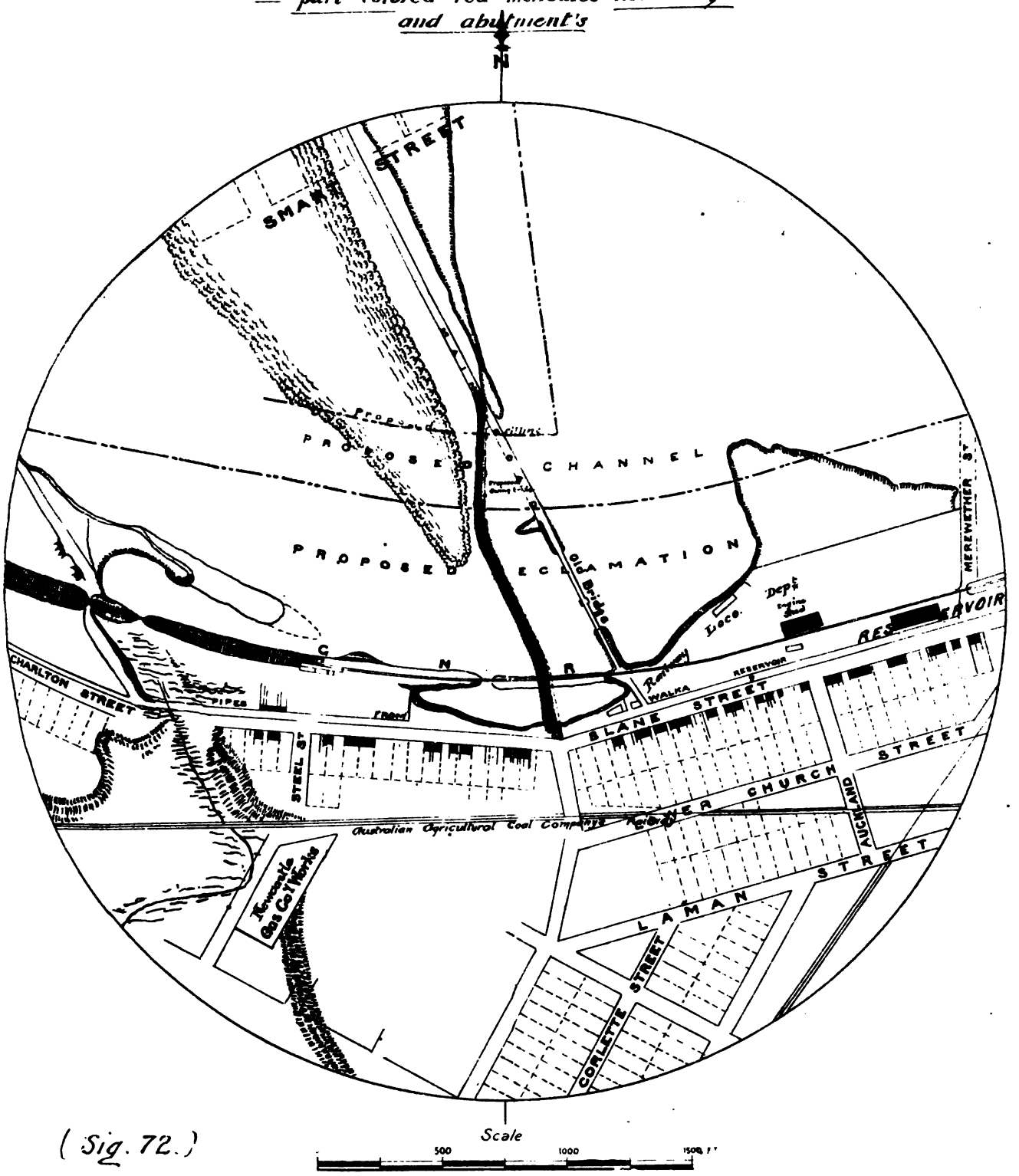

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PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

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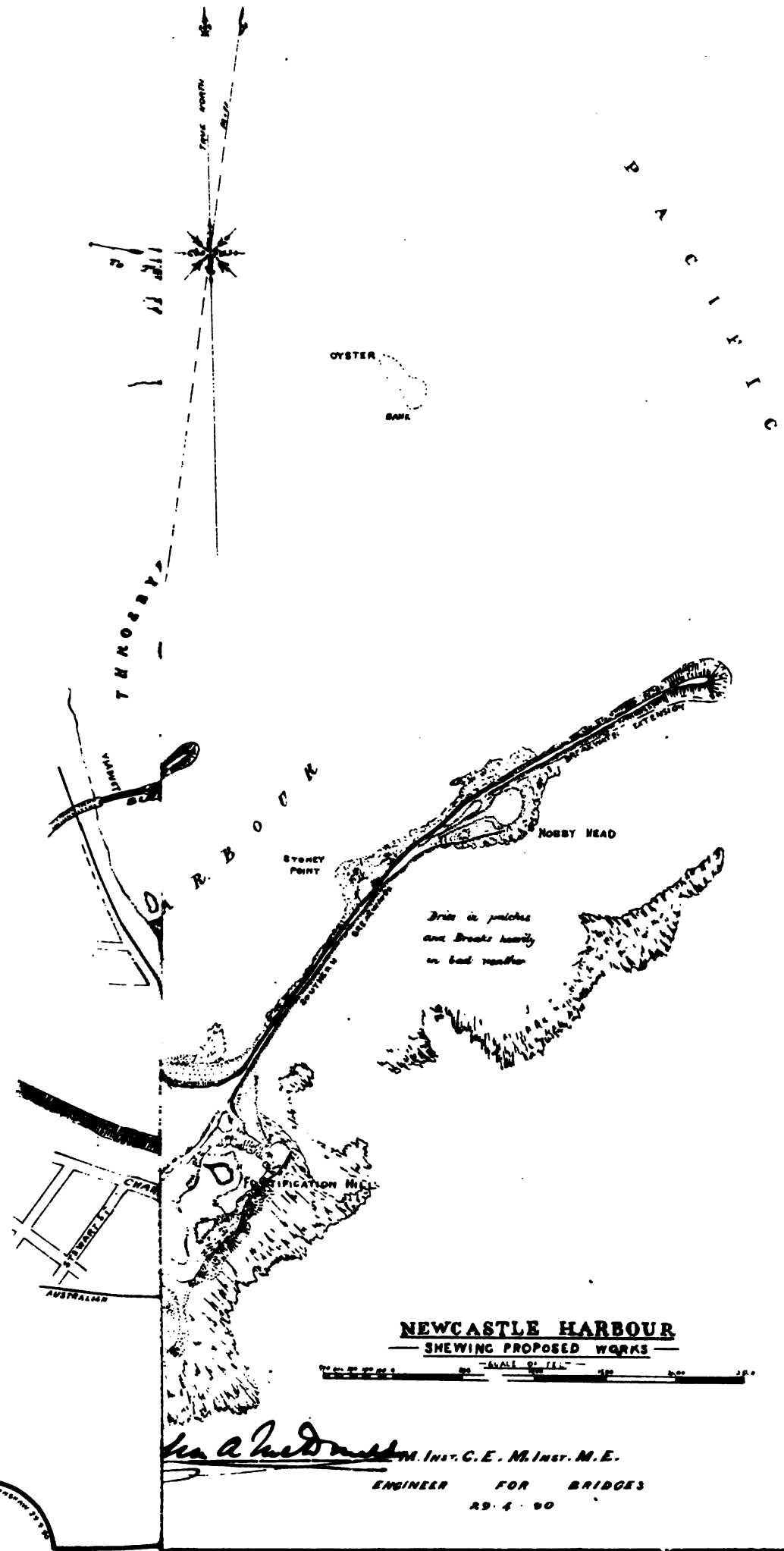

NEWCASTLE HARBOUR

SHEWING PROPOSED WORKS

SCALE OF FEET

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ENGINEER FOR BRIDGES

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1890.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLANS,

RELATING TO THE

PROPOSED IRON BRIDGE AT COWRA.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37, section 8.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

IRON BRIDGE AT COWRA.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the first Session of the present Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, and the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, to whom was referred the duty of considering and reporting upon the expediency of "erecting an Iron Bridge at Cowra," have, after due inquiry, resolved that it is not expedient the proposed bridge should be erected, but that a composite bridge, as since recommended by the Department of Public Works, should be constructed; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the bridge.

1. The bridge referred to the Committee by the Legislative Assembly was to be constructed of iron, the estimated cost of the structure being £69,971, but since that reference the Department of Public Works has placed before the Committee, as a result of a revision of the system of bridge construction in this colony, a proposal for a composite bridge of iron, steel, and timber, to cost £26,538. This composite structure consists of three truss spans of 160 feet, four truss spans of 90 feet, and four 35 feet, and two 30 feet, plain beam approach spans, measured from centre to centre of piers and abutments. The minimum clear carriage-way is 20 feet, and the maximum 21 feet 6 inches, the two footways having each a width of 5 feet. A technical description of this bridge is given on page 5 of the evidence before the Committee, but it may be stated here that the piers carrying the 160-ft. spans are composed of wrought-iron cylinders, 4 ft. 6 in. and 6 ft. diameter, respectively, in land and river piers, stiffened with wrought-iron diaphragm bracing, and founded on cast-iron cylinders filled with cement concrete, the land and river piers being 7 ft. 6 in. and 6 ft. diameter, respectively, at base. The piers carrying 90-ft. spans are built of timber, piers 4 and 5 consisting of nine vertical piles arranged in groups of four, and piers 3 and 10 consisting of five vertical piles arranged in pairs under heels of trusses and one in centre; there are also two short vertical piles to carry up-and-down stream struts; the piles to be rigidly stayed with wales, braces, and compression struts. The piers and abutments carrying approach spans are of timber, each pier consisting of four piles (two vertical and two with a rake of 1 in 12) 18 in. diameter, stayed with wales and braces; the abutments to consist of five vertical piles and two wing piles 17 in. diameter. Piles of piers carrying truss spans will be driven 25 ft.; piles carrying approach spans 20 ft. The bridge has been designed to carry a live load of 84 lb. per square foot of carriage and foot way; the cross girders and longitudinal girders have been designed to carry a traction engine of 16½ tons.

Estimated cost of the bridge.

2. The estimated prime cost of the design for the composite bridge complete, and including carriage (which totals £3,386), is stated as £26,538, assuming the life of the steel chords and cross girders to be one hundred and fifty years, the timber in

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in trusses at twenty-five years, and in decking at twelve and a half years, and the money borrowed at 4 per cent. Extending the cost over 150 years, it would mean, it is represented, an annual charge of £1,735 against the revenue, and this charge would provide for keeping the bridge in thorough repair, the timber in trusses being renewed every twenty-five years, and decking every twelve and a half years, and it would provide also for a sinking fund and for interest on capital. It is further stated in the technical description referred to that by substituting timber piers for the iron piers carrying 160-ft. spans, the prime cost would be reduced to £20,822, and the annual charge to £1,565; that by omitting footways, and still retaining the iron piers, the prime cost would be £23,894, and the annual charge £1,529; that by omitting footways, and substituting timber piers for iron piers carrying the 160-ft. spans, the prime cost would be £18,178, and the annual charge £1,359; and that, should it be possible to obtain the money at 3½ per cent., the annual charge, with cylinders and footways included, would be reduced to £1,624. Omitting footways, if money could be obtained at 3½ per cent., the annual charge would be £1,427. The annual charge of the same design with timber piers instead of iron would be, including footways, £1,486; and by omitting footways, the annual charge would be £1,289.

Nature of the inquiry.

3. The inquiry into this proposed bridge has been one of more than ordinary importance, inasmuch as the composite structure is put forward as a type of bridge likely to be preferable in many instances in which, under the system hitherto followed, iron bridges would be erected. The value of timber as material for bridge construction is in this proposal specially considered, and though in some cases of bridge-building in the future iron bridges will doubtless be found most suitable, timber or composite will under the new plan be substituted for iron wherever practicable, by adopting which course both durability and economy will be secured. These considerations led to the inquiry assuming a more elaborate form than under other circumstances it would have done, and the amended proposal representing the composite bridge was explained to the Committee in a very comprehensive paper, which is included in the evidence given by the Engineer for Bridges, Mr. J. A. McDonald. Another feature in the inquiry has been a special examination of the proposal before the Committee by an engineer outside the Public Service (Mr. A. S. Hamand), and a report, with accompanying estimates and plans, from that gentleman, to enable the Committee to understand whether masonry would be a cheaper and better material for the proposed bridge than either iron, timber, or composite, an offer to furnish this report, together with estimates and plans, having been made by Mr. Hamand to the Committee at an early stage of the inquiry and accepted by them.

Necessity for a new bridge.

4. The site of the proposed bridge is the Lachlan River, at Cowra, and the necessity for a new bridge arises from the old and practically worn-out condition of the present structure. The present bridge, a wooden one, is not beyond repair, but inasmuch as the piers and the approach spans are in a very bad state it would not be economy, it is considered, to repair it. In 1886 it was ascertained that to properly repair the bridge the main piers in the river and the approach piers and spans would have to be renewed, the deck of the bridge widened, and footways fixed to provide for increased traffic; and as the cost of this was estimated at £12,550, and there was a probability of other portions of the bridge requiring to be renewed within ten years, it was decided to prepare designs for a new structure.

Types of bridges submitted to the Committee.

5. Admitting that to provide a new bridge is preferable to repairing the old one, it becomes necessary to consider whether the new structure proposed will be suitable for requirements, and is the best type of bridge to erect. It will be seen from the evidence and from the plans appended to it that three designs, each representing a certain type of bridge, were submitted to the Committee by the Engineer for Bridges, and that a carefully-prepared comparison of the three is given, in order that their individual and relative merits may be properly understood. No. 1 design is for an iron bridge of the lattice type, the estimated prime cost of which, with an iron deck, is £69,971, and with a timber deck £54,959; the annual charge against revenue, calculated on an assumption that the life of the bridge would be 150 years, the money expended in its construction borrowed at 4 per cent., and the cost extended over the period representing the bridge's life, £3,054 with iron deck, and with

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with timber deck, £2,811. No. 2 design, which is that recommended by the Department, is for the composite bridge, already described in a previous part of this Report. No. 3 design is for a timber bridge of nine 90-ft. truss spans and four 35-ft. and three 30-ft. plain beam approach spans; the minimum clear carriageway being 20 ft., and the maximum 21 ft. 6 in.; the two footways having each a width of 5 ft. The estimated prime cost of this design is £21,392, and the annual charge, £1,576.

Reasons of the Department for recommending a composite bridge.

6. From a consideration of these estimates of cost, the Engineer for Bridges concludes that the Department would not be justified in recommending the construction of the iron bridge shown in design No. I, the annual charge connected with which would be £2,811, when the traffic can be equally well served, or nearly so, by the composite bridge (design No. 2), at an annual charge of £1,735. The timber bridge, he states, would, in flood-time, be liable to have its piers carried away by drift timber, and, in addition to this, at the end of twenty-five years, the whole bridge would have to be renewed, the renewal of the bridge rendering it necessary to stop the traffic for about twelve months, unless the new bridge were built on a different site. The composite bridge would provide sufficient waterway for drift timber to pass, and, therefore, the risk of damage from floods would be obviated. Permanent piers are provided for the main spans in order to facilitate renewals, and, with a similar object, provision is made for a permanent lower chord; and it is contended that the estimated cost of the bridge is not extravagant, considering the large traffic which the bridge is required to carry.

Evidence in support of the proposed bridge.

7. The Engineer-in-Chief for Roads and Bridges states in his evidence that the composite type of bridge is an outcome of consultations with the Engineer for Bridges, with a view to economy in future bridge construction. The Engineer for Bridges says the composite structure is the cheapest, and that a bridge of the size represented in the design for this composite structure is necessary for the traffic. The Superintendent of Roads and Bridges in the district of Cowra is of opinion that a good and substantial bridge is necessary, independent of questions arising out of railway construction; and the evidence generally is in this direction.

Visit of a Sectional Committee.

8. A Sectional Committee having been appointed to inquire into the proposed railway from Molong to Parkes and Forbes, and it being therefore necessary for them to visit Cowra, they were authorized to inspect the site of the proposed bridge at Cowra, and take evidence respecting it from local residents. This they did; and the evidence taken, together with the Sectional Committee's report, is published with this Report of the Committee. The Sectional Committee strongly recommended the construction of a new bridge, but did not express an opinion in favour of any design, as at the time their report was written Mr. A. S. Hamand had not carried out the commission entrusted to him by the Committee.

Mr. A. S. Hamand's examination of the proposal before the Committee.

9. In consequence of certain letters to the Committee, Mr. A. S. Hamand was authorized to proceed to Cowra, and report with reference to the proposed bridge. On the 10th February, 1890, he wrote to the Chairman as follows:—

59, Castlereagh-street, Redfern, 10 February, 1890.

Dear Sir,

In view of the Public Works Committee having presently to consider some bridges proposed by the Works Department, I should like to be allowed to remind you that they have been hitherto almost exclusively constructed of either iron or timber, and that both these materials entail expensive maintenance.

Iron girders require periodical cleaning and painting, and their floors of timber need frequent renewal.

It seems a pity that with such abundance of excellent material for masonry that structures composed of stone, brick, or concrete are not designed and erected. In respect of prime cost they generally stand between timber and iron; they cost nothing for annual maintenance; they present a more solid and artistic appearance than either wood or iron; and they have the additional merit that the materials and labour are wholly within the colony.

With respect to the use of cast iron for piers and columns, its use has been abandoned in Great Britain for the last ten or twelve years, the Board of Trade requiring the substitution for it of wrought iron in all piers and weight-carrying positions.

There may be positions where masonry cannot be used, or wholly used, but in nine cases out of ten that I have seen I should have used it in lieu of timber or iron.

I can imagine the official answer to questions on the subject. The same arguments apply to bridges and viaducts on the railways.

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This is how it appears to me to affect the colonial pocket :—

Assume a bridge, on a given site, to cost—in Timber			£40,000
Masonry			60,000
and Iron			80,000
The annual charge on the colony for each would be :—			
Timber (extreme life twenty-five years)—Renewals	£1,600		
Interest at 3½ per cent. ...	1,400		
			3,000
Masonry—Interest at 3½ per cent.			2,100
Iron—Repairs and renewals	£200		
Interest at 3½ per cent.	2,800		
			3,000

I am very doubtful if twenty-five years, as an average life for the whole of the timber in a bridge, is not at least five years too long.

Anyhow, if I am correct in my views, masonry is a more judicious material, and saves the colonial pocket nearly one-third the annual charge entailed by iron or wood.

I do not intend this as an official letter, but you will use the contents in your discretion, the main point being to improve the engineering economy of the Government.

I am, &c.,
ARTHUR S. HAMAND.

J. P. Abbott, Esq., M.L.A., Wentworth Court, Elizabeth-street, Sydney.

This letter was brought before the Committee, and acknowledged. Subsequently a second letter was received from Mr. Hamand, offering to inspect the site of the proposed bridge, and, if in his opinion a masonry bridge was feasible, to prepare, in the course of from ten to fifteen days, a working drawing, specification, and estimate, without making any professional charge to the Committee. Upon this it was resolved that the offer be accepted "on the understanding that only his travelling expenses be charged to the Committee"; and Mr. Hamand thereupon undertook his proposed commission. The result of his visit to Cowra, and his examination of the proposal of the Department before the Committee, will be seen in his report, which is published in the Appendix, and in two plans with which his report was accompanied. A careful consideration of these, and of evidence in reference to them given by the Engineer for Bridges, has led the Committee to the conclusion that the proposal, as submitted by the Department, should be adopted.

Question of site.

10. Some difference of opinion exists amongst those interested in the bridge as to the site where it should be erected. The site of the present bridge faces a street called Bridge-street, which is not the best to meet the requirements of the traffic; and if it were adopted for the new bridge the traffic would have to be provided for elsewhere while the old bridge was being removed and the new one erected. The proposed site faces Kendal-street, the main street of the town, and this, it is generally considered, is preferable to any other.

Decision of the Committee.

11. Viewing all the circumstances of the case, the Committee are of opinion that the composite bridge proposed by the Department should be constructed, and on Wednesday, 7th May, 1890, they expressed this opinion in the following resolution, which was moved by Mr. Tonkin, seconded by Mr. Lee, and passed unanimously :—

> "That, in the opinion of the Committee, it is not expedient that the proposed Iron Bridge at Cowra, at a cost of £69,971, as referred to the Committee by the Legislative Assembly, should be carried out; but in the opinion of the Committee a composite bridge, at a cost of £26,538, as now recommended by the Department of Public Works, should be erected."

J. P. ABBOTT,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 21 May, 1890.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

IRON BRIDGE AT COWRA.

WEDNESDAY, 12 *FEBRUARY*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. John Lackey.	Henry Copeland, Esq.
The Hon. Andrew Garran.	James Ebenezer Tonkin, Esq.
The Hon. Frederick Thomas Humphery.	William Springthorpe Dowel, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.
Jacob Garrard, Esq.	Charles Alfred Lee, Esq.

The Committee proceeded to consider the proposed Iron Bridge at Cowra.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 12 Feb., 1890.

1. *Mr. Lackey.*] You are Under Secretary for Public Works? Yes.
2. And have been for some time? Yes, for about two years.
3. What is the estimate for the proposed bridge over the Lachlan at Cowra? The estimate given to Parliament, and which was really referred to this Committee, was £69,971, but as the result of the revision which has taken place in our system of bridge making, we now wish to put before the Committee a proposal for a composite structure of iron, steel, and timber, at an estimated cost of £26,538. We have also prepared an estimate for a timber bridge amounting to £21,392, but there are very cogent reasons, which I think our engineer will be able to give, showing why it is not desirable in this particular place to build simply a timber bridge. The bridge recommended by the Department is a composite structure, consisting of 3 truss spans of 160 feet, 4 truss spans of 90 feet, and 6 plain beam timber approach spans; the carriage-way is 20 feet, and each of the two foot-ways has a width of 5 feet. The piers under the heels of the 160-ft. spans are of iron filled with concrete, the remaining piers and abutments being of timber.
4. This is to take the place of the bridge at present in existence at Cowra? Yes.
5. Do you know if that is a wooden bridge or an iron bridge? That is, I believe, wholly timber. I have a *précis* of the case, which I now hand in. [The *précis* was read by the Secretary.]
6. Does it state in that *précis* the approximate cost of the bridge? Yes, the estimate is given—£26,538.
7. That is for the alternative project? That is the project before the Committee now—a composite bridge, the description of which I read a short time ago.
8. I suppose the Department considers the present bridge a timber bridge only? Yes.
9. That has been up about twenty years? It is stated in the *précis* of the case.
10. How long ago did the Department come to the conclusion to adopt wooden bridges instead of iron bridges hitherto recommended? It would be misleading to answer the question put in that bold way—viz., that we have cast aside iron bridges and have determined to build timber bridges in every case.
11. Is not that the purport of the recommendation you are making in withdrawing these bridges? In these particular cases.
12. Then it applies to these bridges specially and not to bridges generally? It applies in this way—that in view of the desirability of substituting timber for iron where practicable, we should consider in every case of a proposed bridge whether timber would not answer all the requirements; but it does not follow that in every case we should come to the conclusion to adopt timber. In this case it is proposed to have a composite bridge.
13. In some instances I see that wooden bridges have been built heretofore by the Department? Yes.
14. That is as in the case of the Cowra Bridge? Yes; but, as I pointed out, in many cases where before we would have constructed iron bridges, we would now, under the revision alluded to, substitute timber or composite.
15. That would be for ordinary traffic only; I take it you would not include railway traffic? No, I am not dealing with railway traffic at all.
16. Is it fair to ask if this is the recommendation of the professional head of the Department? The professional officer will follow me, but I think I am correct in saying decidedly yes. There is one other thing I wish to add, as being interesting to the Committee with regard to the existing Cowra bridge, and which has been ascertained by actual observation. I thought the Committee might like this information, and I therefore asked the Engineer for Roads to obtain it. In the week ending 25th December, 1889

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J. Barling, Esq. 12 Feb., 1890.

the following traffic passed over the bridge:—Foot passengers 2,092, daily average 300; horse-back passengers 1,057, daily average 150; carts and buggies 709, daily average 101; drays 186, daily average 26; waggons 63, daily average 9; sheep 450, daily average 65 (much below the average for the year—about 200,000 sheep pass over annually, being a daily average of 600).

17. Are tolls collected at the bridge? There are no tolls collected anywhere now.

18. How were the figures ascertained? I asked Mr. Hickson to send an officer to take special observations with regard to it. I thought the Committee would like to have some definite statistics before them, and I suggested to Mr. Hickson the desirableness of taking them.

19. *Mr. Copeland.*] This officer was there all the week? These statistics are for the week ending 26th December, 1889, and they were ascertained by actual observation that week. The number of cattle and horses that passed over the bridge was 1,818—daily average, 260; bales of wool, 382—daily average, 55; bags of grain, 1,321—daily average, 190; general goods, 41 tons—daily average, 6 tons. In regard to the bales of wool, bags of grain, and the general goods, there is a foot note, which says: "This is also much below the average for the year." As a further index to the amount of traffic passing over the Cowra Bridge a return has been obtained from the Railway Department of the tonnage received at, and sent from, the Cowra Station in the year ending 31st December, 1889, viz.: Inwards, 6,603 tons; outwards, 4,633 tons, nearly all of which comes and goes by way of the bridge.

20. *Mr. O'Sullivan.*] Is that bridge intended to carry a railway as well as the ordinary traffic? No.

21. Are you not aware that there is an agitation for a railway from Cowra to Forbes? I am aware there is such an agitation.

22. Would it not be well to keep this back and see if you will have to build a railway bridge as well? I can hardly answer that question immediately. The officer who will follow me has the requisite local knowledge to do so.

23. I suppose you are aware of the big blunder made at Nowra by constructing a bridge that will not carry a railway? I think you will not ask me to make an admission that the Department made a blunder there.

24. *Dr. Garran.*] Can you tell me whether this wooden bridge was built out of revenue or out of loan money originally? I suppose it was built out of loan money, but I should like to verify that statement.

25. Can you tell me whether at the time the vote was submitted to Parliament the Minister promised that there should be a toll to pay interest upon it? We know that tolls are abolished.

26. Was there ever a toll collected on this bridge? That I cannot say for certain. I will find out.

27. Is the old crossing passable now? The old bridge is used now.

28. I mean the old ford? That I cannot answer. I have not the local knowledge to enable me to answer.

29. The railway crosses the river at Cowra now? Undoubtedly.

30. Was there ever a proposal for combining a traffic bridge with that at the time it was made? I cannot answer that question, but I will ascertain.

31. Do you know what that railway bridge cost? No.

32. The traffic that you spoke of as passing over the bridge now is coming from the west into the town of Cowra? Undoubtedly.

33. Supposing there were a platform on the other side of the bridge would not all the heavy traffic be taken to the railway there? That would practically be making another station and town there.

34. We have got to build a bridge, costing £26,000, to bring the traffic across the river into Cowra when the railway crosses the river to the other side from which the traffic comes;—is it not so? Yes, I think so.

35. We have got one railway bridge that takes the traffic and have got to build another bridge to bring the traffic to the railway? Quite so.

36. You do not know whether there is possibly any accommodation on the other side of the river for the traffic? I cannot say for certain, but Mr. M'Donald will be able to answer that question.

37. Do the sheep and cattle that come there come to take the train at Cowra and go on to Bathurst or Sydney—those large mobs of sheep you spoke of? I see in the railway traffic returns which I have that is not specified. I have merely the details of tonnage, &c.

38. If these sheep are going to take the train at Cowra, they could all be put in trucks on the other side of the river? I should imagine they could.

39. If less than £10,000 built a bridge originally, which lasted over twenty years, and which is still big enough to take the traffic if it were strong enough, why do we want to spend £20,000, when the railway will relieve the traffic? It is of immense inconvenience to the traffic to have to renew a bridge, and a timber bridge would require renewing after a certain number of years, whereas this bridge would last a much greater number of years.

40. This will be a timber bridge on iron supports? Under the wide spans there will be iron supports.

41. It will want repairing? Yes.

42. Where would the money for that come from? From the general revenue.

43. There is no toll to be collected? No.

THURSDAY, 13 *FEBRUARY*, 1890.

Present:—

JOSEPH PALMER ABBOTT, Esq. (Chairman).

The Hon. Andrew Garran.	Henry Copeland, Esq.
The Hon. Frederick Thomas Humphery.	James Ebenezer Tonkin, Esq.
The Hon. William Joseph Trickett.	William Springthorpe Dowel, Esq.
Jacob Garrard, Esq.	Edward William O'Sullivan, Esq.

Charles Alfred Lee, Esq.

The Committee further considered the proposed Iron Bridge at Cowra.

J. A. M'Donald, Esq. 13 Feb., 1890.

John Alexander M'Donald, Esq., M.I.C.E. and M.I.M.E., Engineer for Bridges, sworn, and examined:—

44. *Dr. Garran.*] What position do you hold in the Public Service? Engineer for Bridges in the Roads and Bridges Department.

45. Have you any statement you wish to make before being examined? Yes. 46.

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46. Will you kindly read it, so that the members of the Committee can all hear it? Yes. It is as follows:— J. A. M'Donald, Esq. 13 Feb., 1890

COWRA BRIDGE.

Introductory.

AFTER consultation with the Engineer-in-Chief for Roads and Bridges it has been decided to submit the following designs to your Committee. It may be thought at first sight that the time of the draftsmen of the Roads and Bridges Branch has been wasted in preparing so many designs, and that the Department should have brought forward only the one design recommended. It is not desired that the Committee should form the impression that every—or, in fact, any—bridge designed by the Department has involved so many calculations and designs, but this being a comparatively large bridge, and one for which some provision must shortly be made, it was found necessary to investigate carefully the merits of various types; and having done so, it was thought the information accumulated should be submitted in full to your Committee.

The main point I wish to give prominence to in my evidence is not only a technical one, but one of commercial economy, and a point that requires careful consideration in a new country. I refer to the relative costs of construction and maintenance of timber, composite (timber and metal), and metallic (iron or steel) bridges. The timbers in these colonies differ so much in character from those of other countries, and are so much superior for bridge-work; and the cost of iron bridge-work delivered *in situ* is so high, that it becomes a matter for careful investigation as to when it is advisable and economical to use timber or composite structures, and when to use iron and masonry. It is in roadway bridges in these Colonies inadvisable to blindly follow the practice of English and American Engineers, as the materials and costs are so different.

It is usually considered where the traffic is large and heavy that a permanent structure should be erected (by "permanent" I mean a structure that should last at least 100 years). But I would argue that if the "capital value" of the permanent structure far exceeds the "capital value" of a "temporary" structure (I here use the term "temporary" to refer to a structure lasting not more than 25 years); then for the country districts the "temporary" structure should be adopted, and it is this point I would wish to bring prominently before your Committee.

Old Bridge.

The cost of the Cowra bridge completed in 1870, and built entirely of timber, was £9,120. The funds provided were £5,000 on 1862 loans and £3,000 on 1866 loans, and balance from road votes. It consisted of three M'Callum truss spans, each 130 ft., and the remainder simple beam spans. Four months after completion several of the simple beam spans were carried away by flood, and were then replaced by three truss spans, each 65 feet, at a cost of £1,715.

The cost of repairs previous to 1885 have been charged to the general vote "Repairs to Bridges," and so cannot be separated, but from 1885 to date the repairs have amounted to £1,220—(*see Appendix* 1)—or at the rate of £244 per annum. Excluding repairs for the fifteen years, 1870 to 1885, the value of which are unobtainable, the total expenditure on this bridge to date has been £12,055.

In 1886 it was reported by the Local Road Superintendent that the timber piers were in a very unsafe condition, due to decay, and an amount of £3,000 was placed on the 1887 Estimates for renewing the main piers in the river. Borings were then taken, and further examination showed that the approach spans and piers would have to be renewed, and the deck widened and footways fixed to provide for the increased traffic; the only sound timber remaining in the structure being the M'Callum trusses. An estimate was got out for this work, and it was found that the new iron piers and concrete abutments would cost £6,750; and the renewal of approaches, widening deck and fixing footways, would cost £5,800, or a total of £12,550. It was then decided to get out designs for an entirely new structure, as at the end of ten years the M'Callum trusses would probably have to be renewed also.

Survey.

Survey plan No. 4 was then made, and sections taken.

Selection of site.

The previous papers of this Department do not show the reasons which led to the adoption of the present site for this bridge. A road—Bridge-street—10 chains long and 50 feet wide, was specially resumed as an approach, and this street has of course since been considered as a permanent main thoroughfare. Now that a new bridge is required the question of site has been reconsidered, and four distinct sections have been taken, viz.:—On line of old bridge, on line of proposed bridge as marked on plan, and two lines intermediate. Sections have not been run on any line down stream of present bridge, as not only would such a line still further divert the traffic from a direct line, but as a heavy flood might at any time carry the old bridge away, it would be dangerous during construction to erect the new structure on the down stream side.

From an engineering point of view, and apart from land resumption, the four sites surveyed are fairly equal as to length and cost, and the main point then to consider is the most convenient and direct route for the traffic. The site recommended and marked on plan at the foot of Kendal-street forms a direct and almost straight line from the Railway Station to the opposite bank of the river. The present route takes two right angle turns on to a road only 50 feet wide, whereas Kendal-street is 99 feet wide, and no alienated land need be encroached upon on either side of the river. Again, if the old route were adhered to, the old bridge would have to be removed and the traffic completely stopped for about eighteen months. In addition, the roadway would have to be raised about 9 feet, which would probably lead to litigation with the owners of properties on each side of the road. The narrow width of the road, however, is the most fatal objection to retaining the present line of traffic. Viewing the matter as one of public convenience rather than of private interests, there can, I think, be no doubt that the Kendal-street site is by far the best of any in the town.

Traffic.

Returns of the present traffic over the Cowra Bridge have been obtained from the local Road Superintendent for one week [*Appendix* 2], and this has been taken as the average traffic, and worked out at per annum in Appendix 6. As

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As by far the greater part of the goods trucked at Cowra Railway Station pass over the Road Bridge, a return has been obtained from the Railway Traffic Department [*see Appendix* 3], which gives the total of goods inwards and outwards at 11,236 tons per annum. The local Road Superintendent estimates the goods outwards only at 9,390 tons per annum, over the bridge; so that probably the traffic may be estimated at 10,000 tons per annum for inwards and outwards.

Tolls on all bridges abolished in December, 1882, excepting Hay Bridge, at which place cost of wages, maintenance, and repairs, are deducted from tolls received, and balance handed over to Council.

As no tolls are charged on bridges (except on the Hay Bridge) these works cannot make any direct return to revenue, and cannot therefore be considered as directly reproductive. However, in order to give some idea of the value of the traffic I have in Table Appendix 6 adopted, as a basis for valuation, the lately reduced ferry rates. [*See Appendix* 4.] The result after deducting all costs incurred in collecting these tolls is a credit balance of £3,000 per annum, exclusive of the returns due on about 10,000 tons of goods, and the necessary horses and drays conveying same. If therefore it is admitted that the present ferry tolls are a fair estimate of the value of the convenience given by a bridge, then whether these rates are paid directly or indirectly by the individuals or districts concerned will not affect the question materially, but I submit that if the above premises be granted and the actual traffic returns show a credit balance, then the Department is justified in recommending the construction of the required works if the interest and depreciation and maintenance account does not exceed the returns from traffic.

Designs submitted.

I shall now proceed to a detail description of the different designs submitted. The section of the river is the same in each case, being taken at the foot of Kendal-street, as shown on plan of site.

As so many estimates for variations in design have been made, I propose to give only the results in evidence, and submit the details as an appendix.

Cost diagram.

To facilitate the comparison of these various designs, I have had a diagram, No. 8, prepared, showing at a glance the total relative values of each, every item being represented by a distinctive colour.

Explanation of terms.

I might here be allowed to explain some terms which I shall presently use:—

By "Prime Cost," I mean the first cost of the bridge without any reference to future maintenance or renewals.

By "Annual Charge," I mean the amount required annually to pay interest on first cost including a sinking fund for life of bridge (depreciation) and maintenance, including renewals and painting.

By "Capital Value," I mean the capital required to pay interest, depreciation, and maintenance, or the "annual charge" capitalized.

DESIGN I.

No. 1 design is for an iron bridge of the lattice type, and consists of one 216 ft., two 168 ft. 11½ in., two 111 ft. 9 in., and two 110 ft. 10½ in. spans, measured from centre to centre of piers and abutments. The clear carriage-way is 20 ft. between kerbs, and the two footways have each a width of 5 ft. 2 in.

The girders are continuous over the three river spans, and independent over the four remaining spans, and are 12 ft. 6 in. and 10 ft. deep respectively. The booms of main girders are of trough section, formed of boom plates and stringer plates connected with double L irons. The webs are formed of vertical struts, over bearings, of flat diagonal lattice bar and diagonal channel iron struts set to an angle of 45°, and stiffened with ladder bracing.

The cross girders are of wrought-iron, the ends projecting so as to form cantilevers for carrying footways.

The deck on carriage-way is formed of wrought-iron buckled plates, rivetted to wrought-iron rolled girders secured to cross girders, the footways are formed of buckled plates rivetted to steel beams resting on cantilevers.

The spaces between crowns of buckled plates are to be filled with tarred metal and bluestone screenings thoroughly rolled.

The piers carrying the continuous girders are composed of wrought-iron cylinders 7 ft. diameter, stiffened with wrought-iron diaphragm bracing, and founded on cast-iron cylinders, filled with concrete, 7 ft. and 8 ft. 6 in. diameter respectively in land and river piers.

The piers and abutments carrying independent girders are composed of cement concrete.

Pressures.

Pressure on foundations of	river cylinder pier	is	13·33	tons per	square foot.
„	„	land	„	13·35	„	„
„	„	land concrete pier		3·5	„	„

Calculations.

The bridge has been designed to carry a live load of 84 lb. per square foot of carriage and footway, the cross girders and longitudinal girders have been calculated to carry a traction engine of 16½ tons.

Iron Deck.

The estimated prime cost of this design complete, and including carriage which totals £7,540, will be £69,971. Assuming the life to be 150 years, and money to be borrowed at 4 per cent., and extending the cost over that number of years, it would mean an annual charge of £3,054 against revenue. This charge would provide for keeping bridge in thorough repair, and for sinking fund and interest on capital. This annual charge capitalized would represent £76,350.

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The cost of above design could be reduced by omitting footways, which would bring the prime cost to £65,196, the annual charge to £2,862, and the capital value to £71,550.

Should it be possible to obtain the money at 3½ per cent., the annual charge, footways included, would be reduced to £2,711, and that capitalized would be £77,457.

Omitting footways, if money could be obtained at 3½ per cent., the annual charge would be £2,543, and that capitalized would be £72,657.

Timber Deck.

The prime cost of same design, with timber deck instead of iron, and money borrowed at 4 per cent., would be, including footways, £54,959, the annual charge £2,811, and the capital value £70,275.

By omitting footways (£4,385), the prime cost would be £50,574, the annual charge £2,540, and the capital value £63,500.

Should it be possible to obtain the money at 3½ per cent., the annual charge, footways included, would be £2,552, and that capitalized would be £72,914.

Omitting footways, if money could be obtained at 3½ per cent., the annual charge would be £2,301, and that capitalized would be £65,743.

DESIGN II.

No. 2 design is for a composite structure, and consists of three truss spans of 160 ft., four truss spans of 90 ft. each, and four 35 ft. and two 30 ft. plain beam approach spans measured from centre to centre of piers and abutments. The minimum clear carriage-way is 20 ft., and the maximum 21 ft. 6 in., and the two footways have each a width of 5 ft.

The 160 ft. spans are 27 ft. deep, between centres of triangulations. The top chord principals and diagonal bracings are of ironbark timber, the bottom chord is of steel formed of stringer-plates and L bars top and bottom, stringers to be laced together with flat bars. The suspension bolts are of wrought-iron, placed in groups of four, and connected with wrought-iron washer-plates.

All the timber members are adjustable by means of wedges, so that any shrinkage that occurs can be taken up.

The cross-girders, spaced 20 ft. apart, are of steel, to be "fish-bellied" and formed of web-plates, connected to flange-plates top and bottom by double-angle bars; the ends of cross-girders to project so as to form cantilevers for carrying footways; the webs of cross-girders are stiffened by T bars and packing-plates, and the whole rivetted with wrought-iron rivets.

Longitudinal girders, forming carriage and footway, to be of sawn timber resting on the cross-girders as shown.

Deck on carriage and foot way to be of tallow-wood, laid diagonally on carriage-way, and transversely on footway.

Top and bottom booms to be stiffened with wind-bracing, formed of timber transverse struts and diagonal wrought-iron tie-rods.

The 90 ft. truss spans to be built of timber, the main cross-girders to project so as to carry the deck of footway, the clear width of carriage and foot ways being the same as on the 160 ft. spans.

Piers carrying the 160 ft. spans are composed of wrought-iron cylinders, 4 ft. 6 in. and 6 ft. diameter respectively in land and river piers, stiffened with wrought-iron diaphragm bracing, and founded on cast-iron cylinders filled with cement concrete, the land and river piers being 7 ft. 6 in. and 6 ft. diameter respectively at base.

The piers carrying 90 ft. spans are built of timber, piers 4 and 5 consisting of nine vertical piles arranged in groups of four, and piers 3 and 10 consisting of five vertical piles arranged in pairs under heels of trusses and one in centre; also two short vertical piles to carry up and down stream struts. The piles to be rigidly stayed with wales, braces, and compression struts.

The piers and abutments carrying approach spans to be built of timber, each pier consisting of four piles (two vertical and two with a rake of 1 in 12) 18 in. diameter, stayed with wales and braces. The abutments to consist of five vertical piles and two wing piles 17 in. diameter. Piles of piers carrying truss spans to be driven 25 ft. Piles carrying approach spans to be driven 20 ft.

Pressures.

Pressure on foundations of river cylinders (on rock)	...	14·6 tons per square foot.	
„ „ land pier (on clay)	... ...	6·	„ „

Calculations.

The bridge has been designed to carry a live load of 84 lb. per square foot of carriage and foot way. The cross girders and longitudinal girders have been designed to carry a traction engine of 16½ tons.

Cost.

The estimated prime cost of this design complete, and including carriage (which totals £3,386), is £26,538, assuming the life of the steel chords and cross girders to be one hundred and fifty years, the timber in trusses at twenty-five years, and in decking at twelve and a-half years, and the money borrowed at 4 per cent. Extending the cost over one hundred and fifty years, it would mean an annual charge of £1,735 against the revenue. This charge would provide for keeping the bridge in thorough repair, the timber in trusses being renewed every twenty-five years, and decking every twelve and a-half years; also for sinking fund and interest on capital. This annual charge capitalized would represent £43,375. By substituting timber piers for the iron piers carrying 160 ft. spans, the prime cost would be reduced to £20,822, annual charge to £1,565, and the capital value would be £39,123.

By omitting footways, and still retaining the iron piers in above design, the prime cost would be £23,894, the annual charge £1,529, and the capital value £38,225.

By omitting footways, and substituting timber piers for iron piers carrying the 160 ft. spans, the prime cost would be £18,178, the annual charge £1,359, and the capital value £33,975.

Should it be possible to obtain the money at 3½ per cent., the annual charge, with cylinders and footways included, would be reduced to £1,624, and that capitalized would be £46,400.

Omitting

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Omitting footways, if money could be obtained at 3½ per cent., the annual charge would be £1,427, and that capitalized would be £40,771.

The annual charge of same design with timber piers instead of iron would be, including footways, £1,486, and the capital value £42,457.

By omitting footways, the annual charge would be £1,289, and the capital value £36,829.

Alternative Piers.

These timber piers, consisting of thirteen piles 14 in. x 14 in., arranged in groups of six under heels of trusses, and one in centre, also one up-stream and two down-stream short vertical piles to carry wales and up and down stream struts, the whole pier to be stayed with wales, braces, and internal compression struts. Pressure per square inch of pile will be 439 lb. Cost of piers complete, £2,450, as against the cost of iron and concrete piers, £8,160—or a reduction of £5,710.

DESIGN III.

No. 3 design is for a timber bridge of nine 90-ft. truss spans and four 35-ft. and three 30-ft. plain beam approach spans.

The minimum clear carriage-way is 20 ft., and the maximum 21 ft. 6 in.; the two footways have each a width of 5 ft.

The cross-girders are of timber throughout, the main cross-girders projecting so as to carry deck of both footways.

The river piers (piers 8 and 9) carrying 90-ft. truss spans are formed of wrought-iron 4 ft. 6 in. diameter, stiffened with wrought-iron diaphragm bracing, founded on cast-iron cylinders 4 ft. 6 in. diameter filled in with concrete. The remaining piers are of timber. Piers 4, 5, 6, 7, 10, and 11, carrying 90-ft. truss spans, consists of nine vertical piles, arranged in groups of four, and piers 3 and 12 consist of five vertical piles, arranged in pairs under heels of trusses, and one in centre, also two short vertical piles carrying up and down stream struts; the whole pier stayed with wales, braces, and compression struts.

Piers 1, 2, 13, 14, and 15, and abutments A and B, carrying plain beam approach spans, to be of round timber 18 in. and 17 in. diameter respectively. The piers to consist of two vertical and two piles with a rake of 1 in 12, stayed with wales and braces. Abutments A and B to consist of five vertical piles and two wing pieces.

Pressures.

Pressure on river pier cylinders	14.5 tons per square foot.
„ „ piles	385 lb. per square inch.

Calculations.

This bridge has been designed to carry a live load of 84 lb. per square foot of carriage and foot way.

Cost.

The estimated prime cost of this design is £21,392; the annual charge being £1,576, and the capital value £39,400.

By substituting timber piers for iron the prime cost would be reduced to £19,531, annual charge to £1,543, and capital value to £38,575.

By omitting footways, and still retaining iron piers, the prime cost would be £18,690, annual charge £1,363, and capital value £34,075.

By omitting footways, and substituting timber piers for iron, the prime cost would be £16,830, annual charge £1,330, and capital value £33,250.

Should it be possible to obtain the money at 3½ per cent., the annual charge with cylinders, footways included, would be £1,495, and that capitalized would be £42,714.

Omitting footways, if money could be obtained at 3½ per cent., the annual charge would be reduced to £1,290, and that capitalized would be £36,857.

The annual charge of same design, with timber piers instead of iron, would be, including footways, £1,473, and the capital value £42,086.

By omitting footways the annual charge would be reduced to £1,268, and the capital value £36,229.

Recommendation.

It will be seen from the cost diagram that:—

The cheapest iron bridge has capital value of	£70,275
The composite design recommended has capital value of	£43,375
The cheapest timber bridge has capital value of	£38,575

Iron.

It will therefore be seen that the cheapest iron bridge, *i.e.*, with timber deck, would be 63 per cent. above the capital value of the composite structure; and that the capital value of the composite structure would be about 13 per cent. more than the cheapest timber bridge that could be built over this river suitable for traffic.

I think it will be patent from these figures that the Department would not be justified in recommending the construction of an iron bridge at this place, and incurring such a heavy annual charge as £2,811, when the traffic can be equally well served, or nearly so, at an annual charge of £1,735 with a composite bridge. If this be admitted, there remain then only two for consideration.

Timber.

The timber bridge diagram No. 3 is not considered suitable for this site, as the spans not being more than 90 ft., there would be a risk every flood of the piers being carried away, as large quantities of drift

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drift timber come down during flood-time, and in great lengths. In addition, at the end of 25 years the whole bridge would have to be renewed, and the traffic completely stopped for about 12 months, unless the next new bridge were built on a different site. Though this design is not considered suitable, it was thought advisable to submit it for the sake of comparison only.

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Composite.

The design recommended by this Department is the composite one shown in elevation on diagram No. 2.

The piers for the main spans are permanent, the remaining piers, which can more easily be renewed, are of timber.

The bottom chord is of steel, the suspension bolts of scrap iron, and the remainder of the superstructure is of ironbark timber.

It is found in truss bridges that the bottom chord or tension member is the first to decay, consequent on the number of joints and keys required to give the necessary tensile strength, and the chances thereby given for water to find its way in. When any part of this chord decays it is most difficult to renew it, without expensive staging under the whole truss, and again, on the completion of the life of the truss, scaffolding has to be erected, the whole of the old truss removed and new truss complete erected in its place. This work causes considerable and lengthened interruption to traffic.

To overcome this difficulty to a great extent, I have on the design before you provided for a permanent steel chord, which, of course, slightly increases the cost, but with this arrangement any part of the timber-work in the truss can be renewed with only very slight interruption to the traffic; and when the renewal of the whole of the timber in the truss is necessary only very slight staging will be required to support the chord during re-erection, the traffic going on all the time.

Strength and Cost of Ironbark and Iron.

At this point it might be of interest to give a few facts bearing on the relative strength and cost of ironbark and iron in construction.

Best ironbark half tensile strength of bridge iron for same area.

Weight of bridge iron 3¼ times weight of best ironbark for same strength in tension.

Best ironbark ¼ compression strength of bridge iron for the same area.

Weight of bridge iron 1⅛ times weight of best ironbark for the same strength in compression.

Taking ironbark erected at 5s. per cubic ft. and bridge iron erected at £24 per ton, then—

In tension a ton of ironbark costing £7 10s. is equal in strength to 3·23 tons of bridge iron costing £77 10s.

In compression a ton of ironbark costing £7 10s. is equal in strength to 1·61 tons of bridge iron costing £38 12s.

The above give the comparative *ultimate* strengths, viz.:—Tension, ironbark 11 tons, iron 22 tons; compression, ironbark 4½ tons, iron 17 tons.

Conclusion.

To recapitulate, the cost of the design recommended No. 2 is 13 per cent. above the timber design No. 3, and the advantages claimed are:—

1st—Sufficient waterway for drift timber to pass, and risk of damage from floods obviated.

2nd—Permanent piers to facilitate renewals.

3rd—Permanent lower chord to facilitate renewals.

The annual charge for this design is £1,735, and under the head of "traffic" I have argued that the value of the convenience given by the bridge exceeds £3,000. I would therefore submit that the design recommended is not extravagant in cost considering the large traffic the bridge is required to carry.

Summary of Appendices.

No. 1.—Cost of repairs, Cowra.
No. 2.—Traffic returns by Mr. Road-Superintendent Bartlett.
No. 3.—Traffic returns by Railway Department.
No. 4.—Ferry Tolls.
No. 5.—Bridge Tolls.
No. 6.—Estimated value of Traffic.
Nos. 7 to 22.—Designs 1, 2, and 3.
No. 23.—Summary of Capital Values.

WEDNESDAY, 19 FEBRUARY, 1890.

Present:—

The HONORABLE JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	HENRY COPELAND, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JAMES EBENEZER TONKIN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	WILLIAM SPRINGTHORPE DOWEL, Esq.
The Hon. GEORGE HENRY COX.	EDWARD WILLIAM O'SULLIVAN, Esq.
JACOB GARRARD, Esq.	JOHN HURLEY, Esq.

CHARLES ALFRED LEE, Esq.

The Committee further considered the proposed iron Bridge at Cowra.

Robert Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, sworn, and examined:—

R. Hickson, Esq. 19 Feb., 1890.

47. *Mr. Copeland.*] You are the head of the Roads and Bridges Department? Yes.

48. Have you personally inquired into the necessity for the building of the Cowra bridge? Yes.

49. And you are satisfied that it would be better to build a new bridge than to attempt to patch up the old one? Yes; I examined the old one very carefully.

50. Have you personally inspected it? Yes.

51.

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R. Hickson, Esq. 19 Feb., 1890.

51. I suppose you did not happen to notice the letter in one of yesterday's morning papers with reference to this bridge, in which the writer attempted to make it appear that a very slight expense in repairs would make the existing structure a serviceable bridge for a good many years? No, I did not notice the letter.
52. Are you satisfied, from your own inspection, that the bridge has gone beyond repair? It has not gone beyond repair, but I do not think it would be economy to attempt to repair it. It cannot be said to have gone beyond repair, but I do not think it would be economy to attempt to repair it.
53. You think it would be cheaper, as a matter of expenditure, to build a new bridge? Yes. The great difficulty in connection with repairing that bridge is that the piers—the most important portion—are in a very bad state indeed. If it were only the girders and the top work it would not matter so much, but the piers are in a very bad state.
54. The reason it is proposed to build a new bridge is not that the present bridge will not accommodate all the traffic, but because it is practically worn out? Yes, that is the reason.
55. I suppose if it were not worn out the present bridge would be sufficiently large for all traffic purposes? I think it would, except that it has no foot-way, the absence of which is a great inconvenience.
56. Do you remember how long the bridge has been built? It was built in 1870.
57. Is a period of twenty years considered the usual life for a wooden bridge? It is a long life I think for the piers of a wooden bridge.
58. But have not some repairs to this bridge already taken place? Yes, considerable repairs.
59. Have any of the piers been replaced? I do not think any of them have been actually replaced, but several props have been put up alongside the piers.
60. What do you say is the usual life for a wooden bridge? For the piers of a wooden bridge twenty years is a long life, but that period is a short life for the superstructure.
61. Do you know of what kind of timber the piers are composed? As far as I could judge they were ironbark, but it is very hard to say, because they are in a very bad state, and quite hollow.
62. What part of the piers is found to be the most decayed—beween wind and water? Along the edge, where the pier enters the ground.
63. And is all above that sound? No, not all sound. The decay in some of the piers extends upwards for a considerable distance.
64. About how far? As far as I could strike the pier with my stick; I suppose 7 or 8 feet high. I could feel that the wood was quite hollow. The piers had gone altogether, and especially in one span.
65. Do you find that these piers generally go at the junction with the ground? Yes; that is the place where they are more liable to go.
66. Would it not be possible to protect them in some way by coppering them, or burning them? I do not think that would have any effect in preserving the timber, unless where it is attacked by cobra, which of course is not the case here.
67. Is not that generally the place where they go first, between wind and water, or where they enter the surface of the soil? This is not exactly between wind and water. The reason why piers go between wind and water is that they are sometimes dry and sometimes wet. In this case, where they meet the natural surface of the ground, they are, except in times of flood, always dry, so that coppering them, or putting any outside coating on, would have no effect in preventing decay taking place.
68. Are these piers painted or tarred? They are tarred.
69. Have you tried soaking them in oil? I am not aware that that has been tried.
70. Then, so far as this bridge is concerned, you are quite satisfied that a further expenditure is necessary in the form of a new bridge? I am.
71. And a bridge that would give more accommodation than the old one? Yes. When we are putting it up it is just as well to give a little more accommodation than that afforded by the old one.
72. Do you approve of the suggested position for the new bridge as being more convenient than the site of the old one? Yes. The old site is very inconvenient on account of the narrow street approaching to it. The railway station is up here [*pointing to the map*], and this is the main street of the town. The principal traffic is down Kendall-street and across the bridge, out in this direction. They have now to turn up here to Lachlan-street, past this narrow street—Bridge-street—and then get across the bridge. It is proposed now that the bridge should practically be a continuation of Kendall-street, though it will not be exactly in the same line. I propose moving the position of the bridge slightly, so as to avoid destroying certain frontages, for which compensation would have to be given.
73. On the question of the composition of the bridge, I suppose you are satisfied that a composite bridge would be better than either an iron one or the old wooden one? Very much better than the old wooden one, and, I think, under the circumstances, considering that it is so much cheaper, quite as good as an iron one.
74. Can you say what has been the cause of this sudden new departure by the department in favour of wooden bridges, considering that for many years past all the bridges that have been constructed have been made of iron, notwithstanding the fact that plenty of timber was in the immediate neighbourhood? All the bridges formerly were not of iron. There were a good many, no doubt. I think this new departure, if it may be called so, is mainly due to conversations that have taken place between the Engineer for Bridges (Mr. M'Donald) and myself, with the view of economising, if possible, in the construction of these bridges.
75. And are you quite sure that it will be economy? I think so.
76. I suppose you cannot inform the Committee how it was that when they were building a railway bridge they did not make it capable of carrying traffic? I do not know. I may say, from my own observation, that it would have been a very inconvenient site for a traffic bridge. It is too far away from the town, but I do not know whether or not that was the reason they did not make it capable of carrying traffic.
77. What distance is the railway bridge from the site of this proposed bridge? About 3 miles. I drove up to it, and I think that is about the distance.
78. What distance is the railway bridge from the town? About 3 miles.
79. You are satisfied, I suppose, that this is the best site for the new bridge? Undoubtedly.
80. And you are equally satisfied that it is a necessary expenditure, and that a new bridge should be built? I am.
81. As the permanent head of the department, you favour this proposal for a composite bridge? Yes.

82.

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R. Hickson, Esq. 19 Feb., 1890.

82. *Mr. Cox.*] You said that some of the timber in the piers was hollow;—must it not have been hollow when it was first put up? Not necessarily. I presume it was not.
83. Can the timber get hollow after it has been erected? Yes.
84. *Mr. Copeland.*] What form does the decay assume—dry rot? Yes. The outside surface appears all right, but if you tap the pier, or insert a knife into it, you can see that it is perfectly hollow.
85. Was the timber cut from young trees? I could not say. It was covered with tar, and it was impossible to say what the timber was originally.
86. Do you think it likely that the piers were made out of small trees with heart in the middle? It is quite possible they may have been.
87. Because an ironbark log would scarcely decay above the surface in twenty years? If you get a thoroughly sound log—a thing it is most difficult to ascertain when you are putting up a structure—it will not decay; but it is practically impossible when you are erecting a bridge like that, to say that every log is thoroughly sound right through, and if there is the slightest symptom of unsoundness, dry rot will of course ensue.
88. But would you not be able, when a squared log was lying on the ground, by looking at both ends, to say whether or not it was sound right through? I have seen logs which have been passed as sound timber by some of our best inspectors, and which in three and a half years' time have been attacked with dry rot, and become almost entirely shelled.
89. Was that redgum or ironbark? Ironbark.
90. *Mr. Cox.*] The decay was not owing to the white ant? No. You can easily tell the difference.
91. *Mr. Dowel.*] When were instructions received to prepare plans and specifications for the iron bridge? I could not say when the instructions were originally given. The Engineer for Bridges would be able to give you that information.
92. Can you say when steps were first taken in the department to prepare plans and specifications? I could not.
93. Had they been commenced before you took charge? I do not know exactly how far the work was in progress before I came, but I know there was some work done in connection with it.
94. How long have you had charge of the department? Since the 1st of July last.
95. Then something had been done before then in the direction of preparing plans and specifications? I could not say with any degree of accuracy.
96. Can you say how long it generally takes in your department to prepare the plans and specifications for a bridge? It depends altogether on the magnitude of the work.
97. Such a work as this iron bridge at Cowra? The survey had to be made, the section had to be made, and the borings had to be taken in the first instance.
98. Can you say how long it generally takes to get that preliminary work done? It is very hard to lay down a rule, because there are so many contingencies. For instance, you may not be able to get to work for some time on account of the flooding of the river. If everything went right, I suppose the preliminary work ought to be done in two months or two and a half months.
99. Or three months? Yes, if everything went right.
100. How long after that would it take to prepare the calculations and the strain sheets? A month ought to do the plans after that.
101. After your calculations and strain sheets were prepared, how long did it take you to prepare the plans and specifications for this iron bridge? It would take longer than a month to prepare the strain sheets for the iron bridge. The plans would involve two months' work.
102. Did it not really take over three months to prepare the calculations and the strain sheets? I could not say.
103. How long did it take to prepare the plans and specifications? I could not tell you from memory, but Mr. M'Donald will, no doubt, be able to give you the information.
104. And you cannot say whether twelve months have elapsed since instructions were first received to prepare the plans and specifications for this bridge? I could not.
105. How many draughtsmen have you in your office engaged upon bridge work? I could not tell you the exact number without looking at the pay-sheets.
106. What test do you employ in regard to the wrought iron and steel used in the construction of these bridges? The tests are all in the specification. I have not a copy here, but I can get a copy.
107. By whom are the tests made? If the ironwork is obtained from home the test is made under the supervision of the superintending engineer in England. If the test is made here it is done by the University, under Mr. M'Donald.
108. At the University, by Professor Warren? Yes.
109. Does the Government or the contractor pay for the tests? I could not tell you without looking at the specification. I think the contractor pays for them, but I am not sure.
110. In your specifications for the bridge I notice that you have inserted certain sizes of iron, and I wish to refer you to one or two of them, for the purpose of ascertaining whether it is desirable or absolutely necessary that these particular sizes should be used, or whether they are marketable sizes, as sold by general ironmongers. For instance,—for your main girders you specify that the channel iron bracing shall be 8 in. x 3½ in. x ⅝ in. Is it absolutely necessary that that particular piece of iron should be 3½ in. Would not 3 in. have answered the purpose? 3½ in. gives the sectional area we require, and that is a very marketable size. I might say that, generally speaking, we try as much as possible to arrange that all our iron shall be of marketable sizes.
111. Is this a marketable size—6½ in. x 2⅝ in. x ½ in.? I think it is.
112. There is also specified another size of iron for the channel iron bracing, namely, 5¾ in. x 2⅝ in. Is it absolutely necessary that these unusual sizes should be specified? I am not prepared to say that they are unusual sizes. As I said before, as far as possible, we make all our iron of marketable sizes. There may be a few exceptions to that rule, and perhaps the few instances you have named may be exceptions, but I could not tell you whether they are or not unless I saw the trade list.
113. Take another instance—longitudinal girders, to be rolled, 9½ in. x 4½ in.—is not that an unusual size. Is not 9 in. x 4 in. a trade size? 9½ in. is not an uncommon size to use at home. I have used it.
114. Then take the wrought-iron rolled girders. Is not this an unusual size—20 in. x 7⅛ in.—Is the one-eighth put in for any special reason? Yes, you want the proper strength.

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115. It is absolutely necessary that the one-eighth should be there? That is in thickness; the iron increases in thickness by sixteenths.
116. But the girder you have in your specification is 20 inches deep by $7\frac{1}{8}$ inches, and the flanges are 7 inches thick—is that a usual marketable size? I should say that was a very usual size.
117. $7\frac{1}{8}$ inches? Yes.
118. Do you think it is good policy on the part of the Government that the expensive tests applied to the iron should be paid for by the contractor—do you think it is desirable? I think the contractor should bear the total expense of putting up the bridge.
119. But, with regard to the tests applied to the iron before it is used, do you think it desirable that the contractor should be called upon to bear that expense—would it not be better for the Department to pay for the test? My opinion is that it would be better for the contractor to pay; but it is a matter of opinion.
120. You visited the site of the proposed bridge? Yes.
121. And your Department recommend the composite bridge, with piers of wrought-iron, and timber superstructure? Yes.
122. Is there any stone in the locality suitable for the construction of piers? I believe there is no stone about there at all suitable for piers.
123. No stone within a reasonable distance of Cowra suitable for the masonry required for that bridge? Not as far as I am aware.
124. Would the cost be increased to any considerable extent by the use of stone piers instead of iron cylinders? Yes, the cost of the main piers would be increased. It would be a very difficult thing to put in stone piers in the river.
125. For what reason? You would have to build cofferdams, and pump the water out.
126. Could not a foundation be obtained by driving piles and piers, and then build on the piles? It could be done, but I do not think it would be desirable to put a stone structure on a timber foundation, which would be liable to decay. I think the stone and the iron works should be brought down to the solid.
127. Can you say to what depth the cylinders would be taken down? It is shown on the plan.
128. Is it a rock bottom? Yes.
129. You would not recommend that a foundation of piles should be used in the construction of the bridge? No.
130. And you say there is no stone in the locality suitable for building the bridge? Not as far as I am aware.
131. Did you make any calculations as to the difference in the cost of wrought-iron cylinders and stone or brick work for the piers? I did not, because I thought it would be utterly useless, as nobody would attempt to put in stone piers when constructing a bridge like that.
132. You have informed the Committee that it takes a considerable time to prepare the calculations and strain sheets for these iron bridges? Yes.
133. Would it not be possible to adopt a certain type of bridge and have all the strain sheets already prepared? Yes; if you had all the spans the same.
134. I mean a strain sheet applicable to a variety of spans—a table? It is not at all a desirable thing to do. I may say I have had a great deal of experience in bridge-building at home, and it is the universal practice of engineers there to take out the strains for all bridges, unless of course there happen to be some of exactly the same design. But if the span varies the strains are always taken out afresh.
135. Do you consider the lattice girder type a good type? It is considered the best.
136. The department having determined that that is the best type that could possibly be used, would it not be just as well to have a table of strain sheets prepared so as to obviate the necessity of taking them out for every separate span? I have just said that I do not think it would. It is not the custom at home for engineers of standing in connection with bridge work to do it, and I do not think there would be very much gained by it.
137. The practice at the present time is then, that if a span varies by 1 or 2 feet, entirely fresh calculations have to be made? No, not at all.
138. What is the difference in span which necessitates a fresh strain sheet? You cannot lay down a definite rule. Nobody would be stupid enough if there was only a difference of 2 feet in a span of 100 feet or 200 feet to calculate a fresh strain, but when you come to a difference of 50 feet in a span of 100 or 150 feet the custom is, and I think it is the proper course to adopt, to calculate your strain out afresh.
139. Have there not been numerous complaints to your department about the delay that has occurred in the designs for these bridges? Some complaints have been made, but they have been fully met by the fact that there were not sufficient hands in the office. So far as I am aware, no complaints have been made since we have increased our bridge staff.
140. *Mr. Trickett.*] Is it your opinion that the present bridge might be washed away at any time by a heavy flood? I think it is most unsafe.
141. It is liable to be washed away by a flood at any time? If a heavy flood occurred, bringing down any quantity of timber, I think it is more than likely that the bridge would be carried away.
142. Is it proposed to erect the new bridge above or below the site of the old one? Above.
143. Would not any attempt to improve the present bridge cause great inconvenience in regard to levels, for Mr. M'Donald in his evidence says: "If the old route were adhered to, the roadway would have to be raised about 9 feet, which would probably lead to litigation with the owners of properties on each side of the road." Have you inquired into that matter? If we adhered to the old route we would have to provide for the traffic during the time occupied in the erection of the new bridge, and that would be a most inconvenient thing; but, quite apart from that, supposing the old bridge were a mile away, the new site is by far the better one.
144. Mr. M'Donald in his evidence says:—"Again, if the old route were adhered to, the old bridge would have to be removed and the traffic completely stopped for about eighteen months. In addition, the roadway would have to be raised about 9 feet, which would probably lead to litigation with the owners of properties on each side of the road;"—have you considered that question? Yes, that is one of the reasons, though I do not know that it is a very important reason. The new bridge is higher. But there would be great complications in making a bridge on the present old site, and the main complication would be that provision would have to be made for the traffic during the erection of a new bridge.

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145. One of the reasons I presume why the present bridge might be washed away at any time is because the piers are close together? Yes, and the bridge is not high enough. The piers are in the bed of the river, which is a great mistake.
146. Will that objection be obviated by the proposed composite bridge? To a great extent.
147. And you have made the openings as wide as is consistent with safety? Yes.
148. Are the approaches on either side of the proposed new bridge easy or complicated? Quite easy. The grade on either side is 1 in 25. The earthwork approach would have to be constructed.
149. Could it be made perfectly safe with no possibility of it being washed away? Yes. It will be pitching, and the material will be obtained from Kendall-street, where some levelling work has to be done.
150. Mr. M'Donald says that £12,550 would be required for the purpose of making the present bridge anything like serviceable;—do you agree with that? The estimate is right, but I do not think the bridge would be very serviceable after the work was done.
151. You even think that that would in a great measure be money thrown away? Yes, I think it would be. Nearly every pile is more or less decayed, and very little pressure on the top would break them.
152. You say that when that was done the M'Callum trusses would be the only sound part of the bridge left? Yes.
153. And how long do you think they would last? They ought to last for eight or ten years.
154. Not more than that? I do not think so.
155. They would then have to be renewed at considerable expense? Yes.
156. *Mr. Tonkin.*] Are we to understand that if the piers gave way the M'Callum trusses would support the bridge for eight or ten years? No.
157. *Dr. Garran.*] Does this line on the plan denote the flood level? Yes.
158. Does it show the highest flood level? Yes.
159. And if another flood of that kind occurs the bridge will be impassable—even the new bridge? Yes. In a big flood the approaches are under water, and to make a bridge that would be passable in a high flood you would have to spend thousands of pounds in carrying the structure a considerable distance back.
160. Then it is just a question of how far you should go in regard to the cost of the bridge? These floods occur so seldom that it would be hardly worth while to go to the expense of so much filling up on the town side, and on the other side, where an embankment would have to be made for a great distance.
161. Suppose you were to build the bridge and let the water go over it, would an open approach of that kind be liable to be carried away by the flood? Yes.
162. Then your object in putting it above the flood-level is to secure the safety of the bridge? Yes.
163. Or you could not make it approachable except at an enormous expense? No.
164. With regard to the two piers in the composite bridge—one goes down to the rock, but the other is not marked as going to the rock? It would have to go to the rock.
165. Can you tell us how often these very high floods occur? I could not say without looking up the records. Not often.
166. Can you tell me for how many months in the year the river is fordable there? I could not say. It is fordable during the greater portion of the year.
167. Nine months? Perhaps so.
168. And for nine months in the year the people could do without an approach at all? I do not think they could, because the ford is very bad for heavy teams. Very heavy teams go across with wool, and it would be most inconvenient for them to go down the bank and cross the river, even if it were dry.
169. It would not be an absolute obstruction to the traffic? Well, I think it would, because you can never tell when a flood may come. It may come in the middle of the season, and stop the whole traffic for weeks.
170. When one of those heavy floods does occur how long does the river remain high? It goes down very quickly; that is to say, the top water goes down very fast, but it may be a fortnight or more before the river is fordable.
171. Then if one of these floods were to occur again the traffic on the bridge would not be stopped for more than three or four days? That would be the outside, I should think. I should say not more than two days.
172. Do you know what is the nearest railway station to Cowra on the other side of the river? I do not remember.
173. Suppose the bridge were not usable at a time of flood, could the teams unload at the railway station on the other side of the river? There is no railway station on the other side of the river.
174. But supposing a platform were placed at the bridge on solid ground above flood reach, could the teams unload there and cross the river? Of course they could.
175. Teams coming from that side of the country—from the west? Yes.
176. The principal traffic crossing the bridge now consists of stock, wool, and other produce coming from the west, and going to Sydney? Yes.
177. Could not all that traffic hit the railway at some other point on the west of the river? No doubt it could.
178. Are we not making a very expensive bridge simply for the sake of taking traffic across the river to a railway station, which traffic could hit the same railway on the western side of the river? That is looking at it from the point of view only of the railway traffic. Yes, a station could be made there, no doubt.
179. Would the cost of such a new station be more than the cost of a bridge? No, not so much.
180. Supposing it were so made to ease the traffic from the bridge, would a lighter bridge then do? I do not think so, because you want the span. This bridge has a span of 160 feet, and you must have a certain height of girder to correspond.
181. But that would only apply to the central span? No, it would apply to the whole. The great object, of course, is to have as few piers as possible, so as to offer the least obstruction to the river, and if you have a span of 160 feet the upper structure must correspond in strength.

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John Alexander M'Donald, Esq., M.I.C.E., and M.I.M.E., Engineer for Bridges, sworn, and further examined:—

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182. *Dr. Garran.*] From your printed statement it appears that £8,000 was provided out of loan for the construction of the existing bridge? Yes.
183. And the bridge is now worn out? Yes, with the exception of the M'Callum trusses.
184. The debentures being issued for thirty years the bridge for which the money was borrowed has disappeared, we may say, in twenty years, and the loan will fall due ten years hence? Yes.
185. And there has been no revenue from the bridge to pay either principal or interest? The revenue has been very small. Tolls were collected for nine months, and that was all the revenue.
186. And it is now proposed to add £26,000 of loan money on the top of £8,000. That will debit this bridge with £34,000 in our books? Yes.
187. And I understand you to say that the woodwork will require replacing in twenty-five years, and the decking in 12½ years? Yes.
188. And we have no provision at all for meeting either interest or principal unless it is done out of some local vote, or road and bridge vote? Yes.
189. To make these loan-built bridges sound in their finance we ought to have some replacement fund, ought we not? Well, I suppose to make them sound in their finance, we ought, properly speaking, if the composite design were adopted, to borrow £43,000 odd. That is the capital that is required to carry on the bridge.
190. But why do you want to borrow all that money? That will repay the capital required to carry it on without taking money from any road vote or special vote.
191. But if £26,000 is enough to build the bridge, all we want is revenue from some source—either local rates or road votes—to pay the principal and interest during the life of the bridge? Certainly.
192. I understand that the paper you read to the Committee is a review of our policy in the light of finance? Not exactly that.
193. And that your opinion is that wherever a replacement would be cheaper than going into a heavy loan vote, a replacement is the true policy? Yes.
194. And it is for that reason that you recommend this composite bridge? Yes.
195. Because you think it comes nearest to that idea? It is the cheapest.
196. You say you reckon that the iron piers will last for 120 years? I put the period down at 150 years.
197. Do you include in that all the other ironwork of the bridge? Yes.
198. The girders, stringers, plates, bolts, nuts, and everything? Yes; all the ironwork.
199. And the woodwork will last for twenty-five years? I have no doubt that timber-work like that will last for more than twenty-five years, but twenty-five years has been the average life of the timber bridges built in this country, and I have taken that period in this case.
200. You stated that the existing bridge was under water very shortly after it was built? No. I stated that some of the spans were washed away by the flood of 1870, which was the high flood.
201. Do you know if there has been as high a flood since? I do not think so.
202. Have you any idea what it would have cost to build the original bridge 6 feet higher? It would not have cost anything very considerable. But I do not imagine that the spans were carried away because the water was over the bridge, but because the spans were too small to allow the drift timber to pass through. They were 30 feet spans at that time, and the timber coming down in the flood formed a raft above these narrow spans which carried the piers away. Still, if the bridge had been 6 feet higher, and if the spans had been larger, very likely nothing would have been carried away.
203. If the bridge had been higher it would have been out of danger? Not necessarily. The timber could have formed a raft up against the narrow spans just the same.
204. You mean if the trees brought down by the flood had been longer than the span? Yes, which they generally are.
205. It was not done by the battering of the timber? No; a raft was formed against the bridge, and the pressure thus caused carried it away.
206. Since then you have widened the span? Yes, we have put larger spans in.
207. At a cost of £1,715? Yes.
208. And if that £1,715 had been spent on the original bridge the damage would not have been done? Probably not. We have not had such a flood since.
209. How many broad spans do you think it is necessary to have in a bridge of this kind to keep clear of the timber? I think three is a suitable number for a river like that, where there is an enormous amount of drift timber coming down with the floods.
210. But does not the drift timber generally come in the deep channel where the current is strongest? No. It comes under the three spans, as shown in the design.
211. Do you think it necessary to have three broad spans, to make sure? Yes.
212. The approach to the proposed bridge is much longer than the approach to the existing bridge, is it not? About 200 feet longer.
213. But practically the extra water-way would not be of much use in letting the drift timber go that would be concentrated in the length of the old bridge? Yes, there is great risk, even with the old bridge, in regard to timber coming down. Whenever there is a flood they have to have men down on the bridge with ropes and grappling irons, to guide the timber through the big openings.
214. Do you think there will be any necessity for that with the larger openings you now propose? No, I do not think there will be any risk then.
215. With these broader spans you increase the expense of your bridge in proportion to the width of each span, do you not? Yes, within certain limits. When you get beyond a span of 30 feet the cost of the bridge increases according to the width of the span.
216. But you are obliged to go to that extent here, for the sake of safety? I consider so.
217. Otherwise it would be cheaper to have shorter spans and more of them? Yes.
218. You give a preference to iron piers over wooden piers? Yes.
219. But if it is cheaper to make an iron pier would it not be cheaper to make an iron pier just a foot above the ground, so as to keep your wood out of the ground altogether? But the iron piers are not cheaper than wood.
220. Is it cheaper to renew your timber piling all through? It is cheaper to renew the timber piling every twenty-five years than to put in an iron pier.

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221. Even if the iron pier only just comes above the level of the ground? Yes.
222. The weak part of your timber pile is just where it comes out of the ground, is it not;—I mean for decay? Yes, generally.
223. And if you could avoid putting any of your timber into the ground at all you would get rid of that element of decay? Well, the timber would have to rest on something, and if it were resting on a concrete wall, or sunk into a concrete box, the timber would begin to decay just at the junction with the concrete or stone.
224. In any case, whether it was above ground or not? Yes.
225. You cannot get rid of that element of decay? I do not think so. The decay in the Cowra piers themselves is chiefly at the scarfs. The piles were driven to a great depth, and the timber was not long enough to stand a sufficient height out of the river, and they had to be scarfed.
226. How high above the ground? About from 4 to 8 feet.
227. And the wet got in at the junction? I presume it was the wet that caused it.
228. Do you think that the wet of an occasional flood, which we are told only lasts three or four days, is more injurious to the timber than the wetting of heavy rain? No.
229. Not a bit? No.
230. And if the wood is properly painted or tarred the wet ought hardly to get at the fibre of the timber at all? No; but if the timber is painted or tarred when it is green it is very likely that dry rot will afterwards occur.
231. Do you think that any part of the decay in the present bridge is due to the timber having been cut in the wrong season? The timber in the piers is very poor timber, and in the bridge spans it is very poor, but the M'Callum trusses consist of what was undoubtedly well-picked timber, and it is to a great extent owing to that fact that they have lasted so much longer than the rest of the timber.
232. Did you think that if the piles had been as well selected as the trusses they would have lasted longer? They certainly would. The piles themselves are too small, and they are not well braced. The piers were weak when they were new, considering the weight they had to carry.
233. What timber are they? I do not know.
234. But you know that the trusses are ironbark? No; I do not know that; I believe they are.
235. Should a truss made of iron-bark which is quite out of flood reach decay in twenty-five years? I do not think it should if the timber is well picked; but I have given twenty-five years because that has been the average life of our bridges.
236. When you compare the cost of iron with wood, and give the preference to the former, largely on account of the cost of carriage, do you recognize that in a case like that of the Cowra Bridge, where you have a railway, the cost of carriage is minimized with regard to your iron? The railway carriage comes to something considerable.
237. If you were building a bridge in a part of the country far away from a railway the cost of your iron would be much greater than the cost of local timber? Yes.
238. But where you are putting up a bridge at Cowra and can carry everything by railway the cost of your iron is proportionately less than that of timber? Whether we put up an iron bridge or a timber bridge there, we shall have to get the material through from Sydney.
239. Where will you get the timber for this bridge from? From Sydney.
240. And you have the same length of railway carriage for both material? Yes.
241. Have you taken all that into consideration? Yes.
242. And you are quite of opinion that short iron cylinders will be much dearer than driving in piles and replacing them every twenty-five years? When you speak of short cylinders I presume you suppose that there is rock for them to rest on, or a sufficiently solid bottom, so that even piles would not have to be driven far to reach a solid bottom. The cost would be pretty well proportionate whatever was the length of the cylinder.
243. You mean that you would not have to drive piles as far as you would have to push the cylinders down, if the rock is a considerable distance below? The third cylinder on the plan from this end is sunk a great deal deeper than we should have to drive piles if we were to put a timber pier there.
244. You mean that you do not want to drive your pile upon the rock? No.
245. You do want to drive the cylinder to the rock if it is within reach? Yes, if it is within reasonable reach.
246. What girders have you in the No. 2 plan for the composite bridge. I refer to the cross-girders resting on the piles? The cross-girders at each of the intersections carry the longitudinal girders.
247. And over the piers themselves you put in strong cross-girders? Yes. The truss carries the cross-girders, and the cross girders carry the roadway.
248. And it is cheaper to make all that girder work of iron than to attempt to dispense with iron in that part of the bridge? It would be a little cheaper to use timber there, but there would be considerable difficulty in renewals, and the putting in of new cross girders would involve a serious stoppage of traffic. The main object I have had has been to facilitate renewal, though the expense might be a little greater.
249. So that twenty years hence, when it becomes necessary, you can make the renewal bit by bit without disturbing the general construction of the bridge, and without stopping the traffic? Yes.
250. You can do half at a time? Yes.
251. And you could not do that if the bridge were all wood? No, we should have to take it down completely.
252. Is not a very great part of the traffic now going over the bridge—traffic which comes from the west to reach the railway at Cowra? Yes.
253. On the west side of the river how far have you to go before you get on solid ground out of flood reach? I think at about a mile distant we get beyond the flood level.
254. Is the railway bridge approach over the flooded country on an embankment or on piles? Partly on piles and partly on an embankment.
255. Then even in flood time if there was a platform on that side the traffic could be put on the railway? I have not followed the railway line a sufficient distance to judge.
256. You know the railway bridge? Yes.
257. Is that an iron bridge? Yes, it is an iron bridge with timber approaches.

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258. Has it one span over the river? No, I think there are three main spans.
259. Is the bed of the river covered in one span, the same as is proposed in this case? I really forget.
260. When that bridge was being built could a traffic bridge have been easily attached to it? It would have altered the design very considerably and increased the cost enormously.
261. Would it have been cheaper than making a separate bridge for the road traffic? Yes, I suppose it would have been a little cheaper, but the bridge would have been right away from the traffic of the town.
262. It would not have been so convenient to the town people? I should think not.
263. Looking at the traffic, do you think that this is an unnecessary expense, or that a cheaper bridge could be made to suit the purpose? I do not think a cheaper bridge could be made to suit the purpose,—not one that would afford a guarantee against flood risks.
264. You say that a £12,000 bridge, with, say, £2,000 added to put it out of flood danger, lasted for twenty years and served all the purposes of the township. Is bridge building now dearer, or why is it that you are going to expend £26,000 on the proposed bridge? The present bridge has a 14 feet roadway. It is not so substantially built, except as regards the trusses themselves, as the timber bridges that are built now. The water-way is not so large, the roadway is only 14 feet, and for the proposed bridge it is 20 feet, and we are giving, besides, two footways of 5 feet each. That gives 30 feet width of roadway as against 14 feet, which is more than double, and very nearly doubles the cost.
265. I ask you whether the traffic requirements are such as to justify twice the expenditure on a bridge now that we spent twenty years ago on a bridge that has practically met the requirements? The present bridge being only 14 feet wide it is almost impossible for one vehicle to pass another.
266. It is really too small for the traffic? Yes. It is very difficult for two buggies to pass one another.
267. *Chairman.*] There are no sideways? No.
268. *Dr. Garran.*] If all that western traffic has to come in at the railway-station at Cowra, a traffic bridge, I suppose, would be necessary? Yes; I think so.
269. Suppose that the railway is extended hereafter to Forbes and Parkes, would not that somewhat diminish the traffic over this bridge? I suppose it would in time, but I am hardly in a position to give an opinion on that question.
270. *Chairman.*] Does not the railway at present running from Cowra lessen the traffic in some way? The traffic returns which I have given were taken in December, a long time after the railway was completed.
271. *Dr. Garran.*] But is not this heavy traffic only for one or two months during the wool season? The average traffic has been given, but at times the traffic is congested.
272. So far as you have been able to form an estimate from personal inspection, you do not think this bridge is an extravagant bridge beyond the necessities of the case? No, I do not.
273. *Mr. Humphery.*] I think you say that the total cost of the bridge will be £26,000? £26,538.
274. What portion of that will have to be renewed within twenty-five years? The whole of the timber work.
275. What is the total cost of the portion that will have to be renewed within twenty-five years;—I think you say in your paper that the estimated cost of the iron-work is £15,000? Yes. The cost of the timber-work will be £8,000, and the planking £3,380. This material would have to be renewed within twenty-five years.
276. So that there would be about £14,500 to be expended again within twenty-five years to replace the wooden portion of the bridge? Yes.
277. That is exclusive of maintenance—exclusive of the cost of painting? Yes.
278. I do not understand some of the figures you have given. In answer to Dr. Garran you said that the capital value meant the capital cost—the actual cost of the bridge with interest, is that right? No; it is an assumed cost. It is the capital that a company would have to invest to build that bridge and carry it on indefinitely.
279. Why should you have to find more if you borrow your money at 3½ per cent. than if you borrow it at 4 per cent.? If you take the annual charges given on the last page of the Appendix, the annual charge at 4 per cent. is greater than at 3½ per cent.; but if you capitalize the annual charge at 3½ per cent., it comes to more capital than if you capitalize the same amount at 4 per cent.
280. Do you think those figures are at all necessary in considering the cost of the bridge? Yes; because I think that a comparison of the different designs should be made on the capital value as given in my statement rather than on the prime cost; because the capital value takes into consideration all maintenance, working expenses, and renewals for all time.
281. According to the calculations you have furnished to the Committee, if we borrowed the money at 2 per cent., it would cost us considerably more to build a bridge than if we borrowed it at 4 per cent.? Yes; but you are only realizing 2 per cent. on the capital you use for the bridge.
282. Our object is to ascertain what the bridge will cost us and not what capital we shall get by investing our money at so much per cent. We do not want to see what the bridge will cost, if we borrow our money at 4 per cent., and what the cost will be if we borrow at 3½ per cent. According to your statement if we borrow the money at 4 per cent. the bridge will cost us £43,000, and if we borow it at 3½ per cent. it will cost us £46,000? I do not wish particularly to bring forward the difference between 4 per cent. and 3½ per cent. I first of all had it got out at 4 per cent.; then I thought that the Committee might wish to know what it would be at 3½ per cent. I do not want to draw any comparison between 4 per cent. and 3½ per cent., but my object in making this table up was to show the capitalized value of the different types of bridges, including maintenance, repairs, and renewals, so that the actual cost to the country, of permanent and temporary structures, could be compared.
283. *Mr. Dowel.*] How long have you resided in the colony? A little over ten years.
284. What was the first work you were engaged on? The erection of the Parramatta Bridge at Gladesville.
285. What experience had you in the construction of bridges before you came to the colony? I had been with Messrs. Appleby Brothers for about four years. I got out all the working drawings in the work-shops for the Parramatta Bridge at Gladesville, and I superintended the work.
286. Then you had considerable experience in bridge-building. How long have you held the appointment of Engineer for Bridges? Since July last.
287. What was your position in the Department previously? Assistant Engineer.
288. Can you inform the Committee when instructions were first received for the preparation of the plans for No. 1 design? No instructions were ever received. 289.

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289. How did you come to go to work at it? As soon as I find that money is available for a bridge or any other work, I pass the work into the drawing office if there are men available to do it. I believe this work was referred to the Committee about the 10th October, and on the 16th October I sent a surveyor into the field to make the necessary surveys, and take the sections.
290. When were the borings taken for this bridge? The borings were taken when it was anticipated that we should go in for renewals rather than for reconstruction.
291. How long ago is that? About two years.
292. After you had the borings taken and local investigations made, what was the next step taken with regard to the construction of this bridge; did you prepare calculations and strain sheets? Yes. But we had them going on pretty well simultaneously. We were four months getting out all the drawings, calculations, and sections, and everything in connection with this work.
293. Then virtually, the bridge has been dealt with by the department during the last two years? It has been before the department, but nothing definite has been done. There were not sufficient funds to do anything.
294. But you took the borings for the piers two years ago? Yes.
295. Have you made any calculation as to the cost of substituting stone piers for iron cylinders? There is no suitable stone in the locality.
296. Have you made inquiries? Yes. The stone is suitable for the concrete we should use in the piers, but it is very difficult stone to dress, and not adapted for masonry.
297. Would the construction of stone piers involve a larger cost? In the majority of cases it would. By using iron cylinders we do away with the necessity for cofferdams or timbering of any sort, except a light stage for carrying the cylinders and platforms; and, when the pier is sunk, we can go down to a greater depth with an iron cylinder to get on the rock than we can with timber.
298. But could you not build stone piers on top of the iron cylinders? Yes, but we keep the size of the cylinders down as low as possible, to give the necessary resistance, and we must have some rigid bracing between the two cylinders. If we built up in masonry we should have to carry the masonry across from one cylinder to the other. The cylinders are erected in pairs—one cylinder to each girder.
299. What is the space between the two cylinders? About 25 feet.
300. Would it not be possible to put an iron girder across, or some iron foundation to receive the stone piers? Iron bracing for masonry is always liable to give. It is not so rigid as bracing the ironwork itself together, and these piers have to resist very heavy floods which rise to a great height.
301. If it were decided to adopt the design for the iron bridge, what would be the total amount of the contract that would be expended outside the colony? The contract might be let in the colony.
302. But would the iron be prepared in the colony? It might be—we have had several bridges built in the colony.
303. Of local iron? Not local iron—imported iron.
304. If a tender were accepted for this iron bridge, can you inform the Committee how much of the expenditure would go out of the country? I cannot tell you.
305. You have drawn up your specification in two separate parts—one for the supply of iron work, and one for the supply of labour—what is the relative proportion of these two? They are generally about equal. If the iron bridge were manufactured in the colony, of course the labour would preponderate.
306. How many iron bridges have you manufactured in the colony? I could not tell you exactly, but I could name some of the principal ones. There was one made about five years ago—a bridge about 300 feet long, with iron lattice girders somewhat similar to that shown on the top plan, and it was manufactured by D. and W. Robertson. There was another, about 280 feet long, manufactured about three years ago by R. F. Ritchie, of Auburn. There is one being manufactured now by Vale, of Auburn, and we have small iron bridges, up to about 30 feet span, for which there is an annual contract. These latter have to be manufactured here on account of the shortness of time allowed for delivery.
307. But no iron bridge of any magnitude has been manufactured in the colony? Well, 300 feet is a fair size for a bridge.
308. What is the length of the proposed Cowra bridge? It is 1,000 feet, but it is an exceptionally long bridge.
309. Do you expect to obtain tenders for this bridge in the colony? I presume that tenders will be invited here first as they always are. If no reasonable tender is received, then tenders are usually invited in England.
310. You have informed the Committee that 50 per cent. of the cost of an iron bridge has to go for the ironwork itself; in other words, that half the amount of the contract for an iron bridge goes for material alone? The material complete, ready to be erected. The whole bridge is erected in the contractor's yard before it is sent up to the site.
311. *Mr. Garrard.*] Then it would be 50 per cent. for transit and erection? I did not say so. I said that the erection of the bridge on site would cost about the same as the supply of the whole bridge ready to be erected.
312. *Mr. Dowel.*] Suppose the bridges were designed with brick or stone piers and timber, would not nearly the whole cost be expended in the colony, or a much larger proportion than is the case as the bridges are designed at the present time? It would involve a considerable increase in cost.
313. Have you made the calculations? No; but I know from previous experience of the cost of masonry and brick. I can give you an idea of the cost of masonry as compared with timber. Lately a design was prepared for a bridge with 27-feet span, to be constructed of masonry walls and iron top. The detailed estimate gave a cost of over £1,200. The funds were not sufficient, and a design was got out for a similar bridge to be built of timber, the estimated cost of which was £250. The span of the timber bridge was 25 feet; and, to give you an idea of the cost of brick culverts, I may state that a bridge with a brick arch, the span being 20 feet, cost £572.
314. Then the brick bridge bears a favorable comparison as regards cost? Yes. This particular brick structure was built at a place were bricks were pretty cheap. It comes out a good deal better than the masonry.
315. Is it not a fact that the expense of maintenance of brick and stone bridges is very much less than in the case of iron or timber bridges? Certainly the maintenance is less.
316. Is not that a very considerable item? Yes, but hardly sufficient to cover the enormous difference in cost.

317.

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317. In drawing out the specification of this bridge, have you selected iron of sizes that are marketable? Yes.
318. Are there no unusual sizes specified? No.
319. None, whatever? None. I presume by marketable you mean obtainable—not iron of merchants sizes, because bridge iron is very seldom kept by merchants. Bridge iron is nearly always rolled to order.
320. Is there not a special additional rate for the sizes of iron you have specified for this bridge? In some cases—as for instance, 9 x 6 T iron, which is a special size—we have to pay a special rate. But we save in material by using that section. If we did not use that section we should have to use double-angle iron and a stringer plate, and we should have to put in a larger area on account of the loss of section due to rivet holes. Therefore, we find it more economical to pay a higher rate and use the special section.
321. Take, for instance, the channel iron bracing in your main girders, was it absolutely necessary that $5\frac{1}{4}$-in. x $2\frac{3}{8}$ x $\frac{5}{16}$ should be specified;—would not 5 inches have been sufficient? The size of those channel bars varies, and it depends upon what weight of sectional area you require in your bar. You can have it rolled to $\frac{1}{16}$ longer or $\frac{1}{16}$ less.
322. Are you not aware that it has been stated that by using these unusual sizes the cost of the bridge is very materially increased? We do not use any unusual sizes in the bridges in our department. The sizes are obtained from special lists—merchants lists chiefly—which have been obtained direct from the Agent-General.
323. But you have already stated that these special sizes for which you have specified in the Cowra bridge entail additional cost? I spoke of one section.
324. I ask you as an engineer, whether by specifying usual marketable sizes, such, for instance, as 5 x 2 x $5\frac{1}{16}$, the cost of a bridge would not be materially reduced? In many cases it would be impossible to get these even sizes. The rolls are made, and very often after a few years those rolls are turned up again, and a section made a shade larger. The result is that the section books are changing, and you get odd dimensions in your section book. If you take an ordinary section book from any of the rolling mills you will find that the same thing runs through them—odd dimensions.
325. What was the cause of the delay in bringing this bridge before the Committee,—had you not a sufficient staff in the office? The work has only taken four months. I do not think that is extraordinary, considering the number of drawings and calculations that had to be made.
326. But it has virtually been in hand for two years? The work was not put in hand until the funds were available.
327. How many draughtsmen have you in your department employed in bridge work only? Twenty-seven.
328. *Mr. Cox.*] You said just now that the life of a timber bridge was twenty-five years? I have assumed it to be that.
329. Does that refer to all qualities of timber? That is assumed as the life of the bridge for the sake of argument in my evidence. But of course in some parts of the country where we cannot get good timber the life of a bridge may be only ten years, while in other parts, where we get exceptionally good timber, a bridge may last for thirty or thirty-five years. But from what I have seen of the bridges built by the Roads Department the average life of the timber bridges is about twenty-five years.
330. Are you aware that first-class timber like red gum or ironbark will last for forty, fifty, or sixty years? Yes. I have seen piles drawn from the ground that have been in for fifty years, and they have been as sound as when they were first put in.
331. Do you think it possible that the timber piles used in the Cowra bridge could have been sound when they were first put in? I think they were composed of very poor timber. They were too light to carry the weight that was put on them.
332. And you think that the persons in charge of the works must have been somewhat lenient to the contractors in allowing such timber to be used? Yes, I think so.
333. *Mr. Ibnkin.*] Has the present bridge gone beyond repair? All except the M'Callum trusses.
334. It would be impossible to repair it? It would be possible to repair the piers, but they would always be uncertain. In some places the timber is almost a skin, or from $\frac{1}{4}$-in. to $\frac{1}{2}$-in. thick, the rest being almost gone with dry rot.
335. Would there be no possibility of replacing those piles with new ones? If a start were made to do it, I am afraid the whole of the piers would have to be renewed.
336. What would it cost to renew the whole of the piers? I could not say on the spur of the moment.
337. The superstructure is sound? Only a part of it. All the approach spans are thoroughly gone. We have been patching them up. We have put trestles in the middle of the 65-foot spans, because they would not carry their own weight, and if a heavy flood came, the whole of the trestles and the approach spans might be carried away, because we have now reduced the width of the spans down to the 30 feet that they were originally in 1870, when they were washed away.
338. At a rough calculation do you think it would cost £2,000 to put the present bridge in good order? It could not be done for anything near that.
339. Did you see a letter which appeared in yesterday's *Daily Telegraph?* Yes, I read it.
340. Do you agree in any way with what is stated in that letter? Certainly not.
341. Do you know the gentleman who wrote the letter? No.
342. You do not know whether or not he is an engineer? I do not know him by name or otherwise.
343. Then without any hesitation you recommend a new bridge instead of repairs to the old one? Yes. I think it would only be throwing good money after bad to do anything more to the old bridge.
344. You would do so even if you considered that the traffic, on account of the railway construction, was not so great as it was when the bridge was constructed? Yes. If we had not to make provision for the increased traffic, I should recommend a new bridge.
345. *Mr. Garrard.*] You stated just now, in answer to Mr. Dowel, that you had plans and estimates made for a bridge the abutments of which would be of stone, and which was estimated to cost £1,200. You said that the estimate was so high that you determined to substitute wood. Was the stone in the locality where the bridge was to be erected handy? Yes, fairly so, but the foundations were so bad.
346. And was the wood available too? Yes, within 10 miles.
347. What would have been the life of the stone abutments? I think it would be a safe thing to put it down at about 150 years.

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348. The wood, which was one-fifth of the cost of the stone structure, would have had to be renewed, some of it in twelve and a half years, and some in twenty-five years? Yes. J. A. M'Donald, Esq. 19 Feb., 1890.
349. I suppose the planking would be common to both? One was to have an iron top with tarred metal.
350. Therefore we may say in regard to the wooden bridge that the planking would have had to be renewed in twelve and a half years, and the rest of the woodwork in twenty-five years? Yes.
351. Where stone is available do you favour its use in preference to wood or iron? Certainly, if you can put it in cheaper. It is generally a matter of cost; whichever is the cheapest is used.
352. But you are clearly of opinion that where there is likely to be much traffic an iron structure would be better even than composite bridge such as that now proposed? No, I do not think I can say it would be better. The only risk I see at all in the timber structure on such a large scale is that some of the timber might decay without the officer in charge knowing it; there is a certain amount of risk in that way.
353. It would require very careful supervision from time to time? Yes.
354. And, of course, owing to the very frequent repairs of a composite or wooden structure, traffic would be more often interrupted? Yes. The interruption would not be very great with a 20 feet roadway.
355. Is it not a fact that of late years where the traffic would justify it the Roads Department have gone in for iron bridges exclusively—that there has been a tendency of late years to have more iron bridges than wooden ones? I do not exactly know what you mean. We put up about ten or twelve iron bridges a year and about eighty timber bridges.
356. Then there has not been a disposition on the part of the department lately to construct more iron bridges than wooden ones? No, the same average proportion has been maintained for several years.
357. Then are we to understand that when the department has heretofore used iron bridges they will in future use composite bridges; or will each case rest upon itself? Each case will rest upon itself.
358. So that a bridge may be brought before the Committee next Session of Parliament which will be exclusively of iron under certain altered circumstances? Yes.
359. *Mr. O'Sullivan.*] What load does this bridge carry? 84 lb. to the square foot distributed all over the bridge, or an ordinary traction engine going over. That is the greatest load you could have with cross-girders.
360. Do you know the bridge at Nowra across the Shoalhaven? I only know it by seeing the drawings.
361. That is built entirely of iron is it not? I think it has a timber deck.
362. Do you know the deflection of that bridge—on the centre span? No, I do not.
363. *Mr. Copeland.*] Do you think there is any danger as regards wooden bridges getting burnt? I believe the existing Cowra bridge has been on fire twice.
364. Have you taken that risk into consideration in making your calculations? I do not remember a bridge having been burnt down, so that I think the risk is very small.
365. Would there not be some danger if a bush fire occurred in the summer time? There is no bush on either side of this bridge. One end is right in the town, and the other is on a large common.
366. *Chairman.*] Would not danger from fire arise from travellers camping under the bridge rather than from bush fires? Yes; that is generally the way the fire occurs.
367. *Mr. Dowel.*] With reference to No. 3 design, what do you estimate the cost of that wooden structure? With iron cylinders, and a footway on both sides, £21,392.
368. Would that answer all the purposes of traffic the same as the other two bridges? Yes. There would be a considerable risk during flood time, owing to the small openings.
369. But it would answer the same purposes as regards traffic that the other two designs would? Yes. It would accommodate the traffic, but it would not give the same openings for flood water.
370. What do you estimate is the life of that No. 3 bridge? Twenty-five years.
371. Could you not estimate the life of that bridge for a longer period if it were constructed of good ironbark timber, and there was careful supervision? Yes; we might lengthen the life of the bridges all round. The iron bridge, I daresay, would last more than 150 years, so that I think the proportion would remain practically the same.
372. Have you not got a better gauge or guide to form an opinion in the case of wooden structures than of iron? The average life of timber bridges hitherto has been about twenty-five years.
373. I heard you say that ironbark would last very much longer than twenty-five years? Under some circumstances and in some places, but I do not think you could depend upon the whole structure lasting longer.
374. I am referring to this particular bridge;—you would not undertake to say that the life of the bridge would be longer than twenty-five years under any circumstances? No.

WEDNESDAY, 30 *APRIL*, 1890.

Present:—

THE HONORABLE JOHN LACKEY (VICE-CHAIRMAN).

The Hon. ANDREW GARRAN.	JAMES EBENEZER TONKIN, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM SPRINGTHORPE DOWEL, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. GEORGE HENRY COX.	JOHN HURLEY, Esq.
JACOB GARRARD, Esq.	CHARLES ALFRED LEE, Esq.

The Committee further considered the proposed Iron Bridge at Cowra.

John Alexander M'Donald, Esq., M.I.C.E., and M.I.M.E., Engineer for Bridges, sworn, and further examined:—

375. *Vice-Chairman.*] You have a paper which you desire to read to the Committee? Yes; I have written out the few remarks which I wish to make. They are as follows:— J. A. M'Donald, Esq. 30 April, 1890.

I should like first to make a few remarks on the evidence given by Mr. Hamand, at Cowra:—

To question 193, Mr. Hamand states that "he is a little surprised at a 90 ft. span being put before you at all. They are evidently not big enough, having regard to the floods." So far he entirely concurs with the department. However, in submitting a design he only increases the span about 30ft., giving a waterway of 6,000 square feet, as against 4,380 square feet with the 90 feet span. The department cannot recommend river spans giving less waterway than on design No. 2, or 8,060 square feet.

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To question 196, he states that the advantage of a concrete bridge is that "its life is practically for ever, and it does not cost sixpence for repairs." These statements are both assumptions, and cannot be proved any more than the Department can prove the life of an iron bridge to be only 150 years. I may state that if in design No. 1 the life had been taken at 300 years instead of 150 years, the annual charge would only have been decreased by £7 per annum due to this longer life, and if then the life is still further increased to last for ever, the annual charge would only be decreased by £8 per annum, or a difference in the annual charge of only £1 between 300 years' life and an infinite life; showing that an assumed life of 150 years is practically equivalent to infinity.

To question 217, I may state that the Roads and Bridges Department have and use type designs for the following:—1 type, 1st class timber culverts; 1 type, 2nd class timber culverts; 3 types, iron-decked culverts, with concrete, brick, or masonry walls; 1 type, timber-top culverts, with concrete, brick, or masonry walls; 3 types, low-level bridges; 2 types, plain beam bridges; 2 types, timber truss bridges, 65 ft. span; 2 types, timber truss bridges, 75 ft. span; 2 types, truss bridges, 90 ft. span; 3 types, lift bridges; 1 type, compound beam bridges.

For iron bridges generally, it would be a waste of time to get out a table as suggested, as every iron bridge designed is kept in the office as a type, and as soon as a chance occurs of reproducing it, it is done.

Mr. Hamand states he does not see the reason for centre span, No. 1 design, being 216 feet, and says *he supposes* it might as well be 200 feet. How would he propose to divide up his bays? At present the cross-girders are shown 12 feet pitch, but if he gave the same number of cross-girders the pitch would be 11 feet 1½ inches, which arbitrary dimension would certainly confuse mechanics accustomed to work to eighths of an inch.

In general the span is ruled by the economical pitch of cross-girders, of which pitch the span of main girders must be a multiple. In continuous girder bridges the spans of main girders must be so proportioned that the shearing and bending stresses are fairly equal respectively in each span. For small spans, such as design 1, this is practically done by making the outside spans $\frac{4}{10}$ of the centre span; if all spans are equal there is not much saving in continuity.

In answer to question 224, Mr. Hamand states that he has seen the plans now under consideration for the first time. I may state that your secretary sent for these plans, and personally exhibited them to Mr. Hamand before the latter gave evidence at Cowra.

Question 236 implies that the Department do not recommend concrete or artificial stone for the piers and cylinders. In each of the three designs submitted the iron piers are filled with concrete, the iron cylinder simply forming a thin shell so as to sink the concrete to a solid foundation. The concrete columns carry the weight of the bridge, and not any weight is put on the iron cylinders.

I might now be allowed to proceed to discuss design No. 1, submitted by Mr. Hamand to your Committee, and which was forwarded on to the Roads and Bridges Department by your Committee.

In the design submitted by Mr. Hamand for bridge over the Lachlan River at Cowra the width of deck is 5 feet less, and the sectional area of waterway between abutments (taking the flood-level as a datum) is 4,086 square feet less than provided in Departmental design No. 2. It is, therefore, necessary for the sake of comparison, to assume the deck and waterway to be similar in each design.

ESTIMATED COST OF CONCRETE.

Cost of Materials.	£	s.	d.	
Local granite, machine broken to 2½-in. gauge	0	7	6	per cubic yard.
Gravel screened and broken	0	4	6	do
Clean coarse sand	0	2	6	do
Cement	0	17	6	per cask.
Railway carriage on cement to Cowra	2	0	10	per ton.
Carriage—Cowra Railway Station to bridge site	0	3	0	do.

For carriage—Six casks of cement weigh 1 ton.

For measurement—One cask cement contains 4 cubic feet.

The proportion specified by Mr. Hamand is four parts stone, two parts sand, and one part cement.

If five parts of stone are used to two parts of mortar, the proportion of mortar, two of sand to one of cement, is just sufficient to fill the interstices of the stone when broken to a 2½-in. gauge. If less stone is used the strength of the concrete is not increased, as the strength is proportionate to the adhesive strength of the mortar; but the cost per cubic yard is increased, as where the proportion—5 cubic yards, 2 cubic yards, 1 cubic yard—produces practically 5 cubic yards of concrete, the proportion 4 cubic yards, 2 cubic yards, 1 cubic yard produces 4·4 cubic yards of concrete.

I will first give the details of the estimated cost of concrete given by the Department, and then on the same basis give the detailed estimated cost of concrete as specified by Mr. Hamand.

1. AS SPECIFIED BY THE WORKS DEPARTMENT.

	£	s.	d.
Gravel screened and broken, 20 cubic feet = 4/6 × $\frac{20}{27}$	0	3	4
Sand, 8 cubic feet = 2/6 × $\frac{8}{27}$	0	0	9
Cement, 1 cask = 4 cubic feet	0	17	6
Carriage to site of 1 cask cement=43/10 × $\frac{1}{8}$	0	7	3
Total cost for 20 cubic feet of materials	1	8	10
28/10 × $\frac{27}{20}$=total cost 1 cubic yard of material	1	18	3
Labour per cubic yard	0	10	0
Allowed in departmental estimate for contingencies, plant, and profit per cubic yard	0	11	9
	3	0	0

2. AS SPECIFIED BY MR. HAMAND.

	£	s.	d.
Local granite, 16 cubic feet = 7/6 × $\frac{16}{27}$	0	4	5
Sand, 8 cubic feet = 2/6 × $\frac{8}{27}$	0	0	9
Cement, 1 cask = 4 cubic feet	0	17	6
Carriage to site of 1 cask cement = 43/10 × $\frac{1}{8}$	0	7	3
Total cost for 17·6 cubic feet of materials	1	9	11
27/11 × $\frac{27}{17\cdot6}$ = total cost materials for 1 cubic yard	2	5	10
Labour, per cubic yard	0	10	0
Contingencies, plant, and profit per cubic yard	0	11	9
Departmental estimate of cost of concrete per cubic yard, as specified by Mr. Hamand	3	7	7

The item above of "plant" includes board frames (but not centring), cranes, skips, punts, staging, measuring boxes, and all tools required for the work.

If the broken granite be taken at 10s. (the present local price for hand-broken) the price of the concrete, as specified by Mr. Hamand, would be increased to £3 9s. 9d. per cubic yard.

The price for concrete given by Mr. Hamand is 44s., whilst in the departmental estimate 60s. has been allowed. Taking the latter price (60s.) as a basis, the proportion and materials specified by Mr. Hamand would fix the rate of concrete proposed to be used by him at 67s. 7d. per cubic yard.

"Excavation in rock" and "other than rock" have been taken at the rates adopted in estimating cost of No. 2 departmental design.

It would appear that no provision has been made in Mr. Hamand's estimate for the floating over, and lining up, of the exposed faces, and in my estimate of his design I have shown the estimated cost of same.

The total sectional area of waterway provided in departmental design between abutments, is 24,108 square feet, against 20,072 square feet, in Mr. Hamand's design. Supposing the deck to be run out level from the centre of end span it would be necessary to add twelve extra arch spans to Mr. Hamand's design to make up the difference in sectional area of waterway between the departmental design and the design submitted by Mr. Hamand. The

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The length of Mr. Hamand's bridge would then be 1,716 lineal feet; the departmental design showing 1,040 lineal feet of bridge. It will thus be seen that to give the same sectional area of waterway, the arch bridge would require to be 676 lineal feet longer than the composite design.

The following table shows the obstruction to flood caused by the massive piers so necessary in bridges of the arch type to be 15 per cent., whilst in the departmental design the obstruction is only 4 per cent. of the total waterway.

Flood Areas :—

Design.	Total length of bridge between abutments.	Total sectional area of flood between abutments.	Sectional area of flood obstructed by piers.	Percentage of obstruction by piers to flood waters.
Mr. Hamand's	924 feet.	23,625 square feet.	3,553 square feet.	15
Department No. 2	1,040 do	25,087 do	979 do	4

	£
The estimated cost of Mr. Hamand's design as submitted by him, with concrete taken at 44s. per cubic yard, is	37,487
The cost of same design, with the concrete run out, at 67s. 7d., is.....	54,650
By making the deck on arch bridge, the same width as on departmental design, the cost would be increased by	8,614
The floating and lining up of exposed faces of walls would also add to the cost of Mr. Hamand's bridge	2,100
And to build Mr. Hamand's bridge with the same sectional area of waterway as provided in departmental design, viz., the cost of twelve extra spans, would mean a further expenditure of.....	27,360
Thus, it will be seen, that if the design submitted by Mr. Hamand was modified, so as to provide all the advantages of the departmental design, the total cost would amount to	92,724
Then for comparison, admitting Mr. Hamand's assumption that life = infinity, and maintenance and repairs are nil, then capital value of his design is	92,724
Departmental design I, capital value.....	76,350
,, II, ,, (that recommended).....	43,375
,, III, ,, ...	39,400

The Commissioner for Roads did not think it necessary to go into detail with regard to No. 2 design, submitted by Mr. Hamand, as it was practically a dam across the river. The deck level is too high for a low-level bridge, and it is just the height to catch all the timber that would come down in a flood and bank the water up, and to a great extent cover the town of Cowra.

376. *Mr. O'Sullivan.*] Then this bridge would be useless in flood-time? All the bridges, departmental or otherwise, would be useless in times of highest flood.

377. *Dr. Garran.*] And the bridge would be under water? Certainly.

Some reference has been made to British Board of Trade rules, and it would be as well here to state that this department do not adhere to these rules. The British Board of Trade rule for the safe working stress on iron in bridgework is 5 tons in tension and 4 tons in compression per square inch of section. I do not think any engineer would take the responsibility of designing bridges on this assumption, as it makes no allowance for alternating or variable stresses; it assumes that, if one application of a strain of 20 tons will break a bar, that it is safe to load it in an indefinite number of times with one-fourth or with 5 tons. The diagram (*produced*) shows the rule adopted by this Department, the black line being plotted from Weyrauch's formulæ. The full red line represents Board of Trade rule for tension, and the dotted red line represents Board of Trade rule for compression. Weyrauch's formulæ were deduced by Professor Launhardt and J. J. Weyrauch from the investigations which Wöhler carried out during eighteen years at the instance of the Prussian Government, and have been practically confirmed by other experimentors during the last twenty years. I think that that fully justifies the Department in not adhering to the Board of Trade in that particular. For timber structures the British Board of Trade rules are equally vague; but no rule made for British timbers could apply to the timbers of this Colony. I may add that the rule of this Department for large timber structures is to allow a factor of safety of 5 in compression members after calculating the breaking weight by Gordon's or Rankin's formulæ for long columns, but adopting the constants as ascertained by Professor Warren in his exhaustive experiments on New South Wales timbers. However, if taken out without treating as long columns, the factor of safety would be about 7 in this case. If all the stresses on a structure have been carefully considered, and the behaviour of the material employed under the stresses imposed is known, a large factor of safety is not required, but can only lead to a waste of material. As showing the unreliability of the British Board of Trade rules, it may be stated that the Tay Bridge was passed by that Board a year before its failure. The Board of Trade also do not adhere to their own rules, for in the Forth Bridge they have allowed 7½ tons per square inch on the steel when their rule is 6½ tons.

Mr. Hamand, in his criticism of the departmental design, considers a calculated load of 84 lb. per square foot does not allow sufficient margin for safety for large highway bridges, but gives no reason for his opinion. On one of the 160-foot spans of the composite design the greatest load that could possibly be packed on the roadway (including boilers and machinery) would be 95 tons. This has been ascertained by actual experiment on Tæmas Bridge. The departmental calculated load is 180 tons, leaving 85 tons for passenger loading on the two footways, or at the rate of 120 lb. per square foot. It would be useless to calculate for a compact crowd on the roadway in addition, as it would be the duty of the police to prevent such a thing, even if it was possible to obtain sufficient people around Cowra. As previously stated, the maximum concentrated moving load calculated for is a traction engine or other load of 16½ tons.

When giving evidence before this Committee on 19th February, questions were asked me in reference to certain sizes of iron specified by the Roads and Bridges Department, and I now submit a few typical sheets of iron sections. My reason in submitting merchants' lists instead of makers' lists is, that the merchants' lists are more complete, being a compilation of the sections rolled at, perhaps, fifty different mills. The lists submitted are as follows :—Östermeyer, Dewoz, & Co., D. and W. Robertson, Jules Renard & Co., C. C. Dunkerley & Co. It will be seen by reference to these lists that the channel and girder sections mentioned by Mr. Dowel are all given on at least two of them. That odd dimensions are rather the rule than the exception is at once apparent. Take for example Dunkerley's list, and commence at column 3 on channel irons; they run :—

$6\frac{1}{4} \times 2\frac{9}{16} \times \frac{1}{2} \times 16\frac{3}{4}$ lb. per foot run.
$6\frac{1}{4} \times 3\frac{3}{16} \times \frac{5}{16} \times 15\frac{1}{2}$ lb. ,, ,,
$6\frac{1}{4} \times 2\frac{3}{8} \times \frac{5}{16} \times 12\frac{1}{4}$ lb. ,, ,,
$6\frac{3}{4} \times 2\frac{1}{4} \times \frac{15}{16} \times 19$ lb. ,, ,,
$6\frac{7}{8} \times 2\frac{5}{16} \times \frac{5}{16} \times 12\frac{1}{2}$ lb. ,, ,,

And again, in the girders similar odd dimensions occur. To illustrate the reason for some of these odd dimensions I have had the section of a girder 20″ × 7″ × ¾″ web × 90 lb. per foot run drawn on diagram (produced) and coloured blue. The breaking weight of this girder for a 27 feet span is 37 tons at the centre. With the same rolls the section may be increased ⅛″ without any extra cost per ton, as shown by the portion coloured red. This then gives a thickness of web of ⅞,″ a width of flange of 7⅛,″ and a weight per foot run of 100 lb., and the strength is increased from 37 tons to 39 tons. Without extra cost per ton this section could be rolled to any weight between 90 lb. and 100 lb. per foot run, which would give smaller fractions than ¼ inch. The above illustration applies in the same manner to channel irons as to girders. Another reason for the odd dimensions found on all merchants lists is, that a large percentage of girders and channel irons are rolled on the Continent, where the metrical system of measurement is used. For instance, a girder in English measurement 19¾″ × 7⅛″ would, according to the metrical system, read 500 × 180 millimetres, which are fairly even dimensions. It is useless for the engineer designing bridgework to assume that the sizes of channels and girders increase in size by a certain fixed and even increment, for such is not the case, and he must be content to specify the nearest size obtainable on some reliable merchant's

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merchant's lists, even though it may run to odd fractions, as for instance a girder 11 1/16" deep × 4 15/16" wide × 7/16" thick × 39·7 lb. per foot run (metrical measurement—300 millimetres × 125 millimetres × 11 millimetres × 59 kilogrammes) may be thought an odd size, but it is obtainable to order. I think the foregoing remarks will entirely clear the Department from any suspicion that unmarketable sizes of iron are specified, and I would draw the attention of the Committee to the fact that this question of sizes of iron is not involved in the design now recommended by the Department for Public Works, as in this design *no rolled girders and no channel irons are shown, the only sections required being steel angle bars 4" × 3" × ½," flat plates and round iron for bolts and suspension rods.* I hand in detailed estimate of Mr. Hamand's design at the rates adopted by the Department.

COWRA BRIDGE.

Estimated Cost of Mr. Hamand's Design at rates comparative with those adopted in Departmental Designs.

Quantity.	Item.	Rate.	Amount.
cub. yds.		£ s. d.	£. s. d.
1,744	Excavation other than rock	0 2 6 c. yd.	218 0 0
1,128	Do do river piers	1 0 0 do	1,128 0 0
28	Do rock do.	10 0 0 do	280 0 0
13,492	Masonry concrete	3 7 9 do	45,704 3 0
.....	Allow for river foundations	bulk sum	2,000 0 0
.....	Do centering, moulds, &c.	do	3,500 0 0
7,500	Filling to arches	0 2 6 do	937 10 0
623	Metalling	0 6 0 do	187 16 0
	Embankment as in No. 2 design		695 16 0
		Total.....	54,651 5 0

Mr. Hamand's design	£54,651	
Floating and lining 19,382 sq. yds. at 2s. 2d. per sq. yd.	2,100	
Estimated cost of increasing roadway from 25′ to 30′	8,464	
Floating due to extra width, 1,240 yds. at 2s. 2d.	150	
Total estimated cost of design with 30′ roadway		£65,364

Estimated cost of additional arches necessary in Mr. Hamand's design to give a waterway equal to that provided in Departmental design No. 2.

One arch—Concrete, 619 c. yds. at £3 7s. 7d. (Departmental estimated rate)	£2,092	
Filling 600 c. yds. at 2s. 6d. (Mr. Hamand's rate)	75	
Excavation 104 c. yds. at 2s. 6d. (Mr. Hamand's rate)	13	
Cost of one arch	£2,180	
Cost of twelve arches	26,160	
Floating same	1,200	
Total Cost of twelve arches complete		£27,360
Total estimated cost of bridge with width of deck and waterway equal to that provided in Departmental design No 2.		£92,724

378. *Mr. Tonkin.*] According to the report which you have just read, the Department are entirely against concrete bridges? Against bridges built altogether of concrete for such a site as this, certainly.

379. Have you any idea of using concrete for any other site, or in any bridges at all? We do not often use concrete in the form of arches on account of the expense of centring, and of the difficulty of getting the centring done well, but we are constantly using concrete for abutments, and the cylinder piers of all the iron bridges are filled with concrete.

380. Has there been a bridge built in New South Wales entirely of concrete? I do not know of one.

381. *Dr. Garran.*] The Bondi sewer is concrete? Yes.

382. *Mr. Tonkin.*] What would be the span of that? About 20 feet, I think.

383. You say that Mr. Hamand's estimate of the cost of the concrete per yard is something like 16s. below the departmental estimate? Yes.

384. Does Mr. Hamand in his report give the quantities of material used? Yes, and they have been taken as a basis.

385. It is on them that you base your estimate of a higher price? Yes. His concrete is made up of four of stone to two of sand and one of cement. The stone costs at the very least 7s. 6d. a cubic yard for quarrying and breaking. There is very good gravel to be obtained near the site of this bridge which could be got for 4s. 6d. a cubic yard, and which the Department intend to use, so that that makes a saving of 3s. Again, by using so much more sand and cement per cubic yard than the Department have specified the cost of the concrete is increased.

386. Do you know the cost of the sand per cubic yard there? Yes; it is given. It is the same in both cases. Mr. Hamand uses broken stone instead of gravel, and for his cement a proportion of four of stone to two of mortar where we use five of stone to two of mortar, and that increases the cost of his work.

387. How does he make out that his cost is 16s. per cubic yard less than the departmental cost? I cannot answer that.

388. Does he do it? His estimate is 44s.

389. And yours is £3? For our concrete; not for his.

390. According to you, his concrete would cost £3 7s. 7d.? Yes.

391. Can you inform the Committee how he makes it 44s. after he has specified the ingredients of the concreet? I cannot.

392. Do you think that there is a possibility of the Department having overcharged for any material—for stone, gravel, sand, or whatever may be used? The estimate for these three designs is liberal all through, in order to insure that the contract when let shall not exceed it, and also because the detailed drawings are not yet completed, and modifications may have to be made. There would, however, be the same proportion between the designs.

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393. That would be with regard to the quantities used;—I am speaking of the cost of one yard of concrete;—you say it is £3 or £3 7s. 7d., according to the ingredients used;—I want to know whether it is possible that the Department may have over-estimated the value of some of these ingredients;—I ask you this because we have found in other investigations that the departmental estimate for the fencing of railways has been nearly double the actual cost? There is very little chance of that occurring with regard to the estimate for iron bridges in our Department. As a rule, they are very close indeed to the tenders accepted, both for supply and erection. We alter our prices according to the distance from Sydney. The distance of carriage is always considered, as you will see in the detailed estimate given in the appendix.
394. But where you can get good gravel or stone very easily it surely makes a difference in the cost? Certainly. I cannot carry all these prices in my head; but on the Tamworth bridge, which is an almost parallel case with Cowra, we paid £3 15s. a yard for concrete, and used river gravel.
395. In the erection of a concrete bridge, would the material used be superior to that used for filling up the cylinders of an iron bridge? No. The strength of material is equally important in each case.
396. You say that Mr. Hamand's design No. 2 would be a dam to the water? Practically a dam.
397. Can you tell the Committee to what height the country on the western bank would be flooded before the water rose to the deck of Mr. Hamand's bridge? Six feet.
398. If there were 8 feet of water on that large flat would it be worth while to have the bridge above the level of the water;—could it be used in any way? No.
399. Then if it were not above flood level nothing would be lost, as the height of the water on the flat land would render it inaccessible? Quite true—with regard to the matter of traffic only.
400. Could the bridge be used at the time of one of these extraordinary floods, if it were above the flood-level? No.
401-2. Then in what manner would it be a dam, because the water would be all over the level country? It would reduce the sectional area of water-way, and tend to compel it to run across at some other place and make a new channel. The piers and arches would offer considerable obstruction to the water, and the tendency of that would be to scour out the present channel or to make a new one.
403. You say in your report that Mr. Hamand has taken exception to the 90 feet span in your design, and then you say that his design is only 120 feet;—is there not some difference between the water-way of the span of 120 feet and that of 90 feet? There is a good deal of difference.
404. Could not a span of 90 feet be an absolute failure as far as the water-way is concerned when a span of 120 feet would meet all requirements? That might be so.
405. Then there is nothing in your remark? What I wanted to point out is that the Department do not propose a 90 feet span—they recommend nothing less than a 160 feet span.
406. You have no hesitation in condemning the construction of the concrete bridge for this particular spot? I think the cost would condemn it.
407. You think that the cost of a concrete bridge would be more than that of an iron structure or of a composite structure? Of course, if a low-level bridge was considered necessary, a concrete bridge might be built for less perhaps than the design recommended by the Department; but it would not give the same facilities.
408. What is your opinion about a low-level bridge? That it must be below the level at which the timber comes down.
409. You do not advocate one because you think it would not meet the requirements? Yes.
410. Do you condemn the construction of a high-level concrete bridge? Yes; because of the price.
411. You favour an iron bridge—entirely of iron? No; a composite bridge.
412. Such as was suggested by yourself? Yes; by the Department.
413. You think it would meet all requirements, and be in the end a cheaper bridge than the concrete bridge suggested by Mr. Hamand? Yes.
414. You do not think that it would last longer? Of course, in the comparison which I have made, I have given the capital values, and compared them on that. If they were compared on the prime cost the difference in favour of the Departmental design would be greater.
415. I take it that those calculations are carefully worked out, and that, consequently, the difference between 150 years and eternity is not worth considering? No.
416. You have no hesitation in saying that an iron structure would be preferable to a concrete one? No.
417. In your design there would be a wooden deck? Yes.
418. That, I suppose, you will allow, will only last 20 years? We have allowed 12½ years for it.
419. The other structure would have a concrete flooring;—would not that last longer than a timber decking? The question of life has been taken into consideration in regard to the capital value on which the two are compared.
420. The capital value of the high-level bridge is put down at £92,000? Yes; and of the composite one at £43,000. That is allowing a sinking fund for paying off the cost of the deck in twelve and a half years, so that it would bring them both on the same basis for comparison.
421. Do you think that if it were decided to build a concrete bridge, there would be any difficulty in constructing it according to Mr. Hamand's specifications and estimates? It certainly could be constructed, though I am not aware of any bridges having such a large span being constructed of concrete, and it is possible that there may be difficulties in relation to expansion and contraction. However, I do not think that that need be much feared, if the foundations are solid.
422. Do you think that there would be much difficulty in constructing such bridges where rivers are so liable to heavy floods and freshes as ours are? I do not think there would be much risk in this case.
423. Do you think that on account of the novelty of the construction, the estimated cost would be greatly under the actual cost? No.
424. *Mr. Lee.*] Do you know whether the flood level taken by you in No. 2 design, is the same as that taken by Mr. Hamand in No. 1 design? I have not compared them, but I presume that they are the same, because Mr. Hamand was supplied with a tracing of the river, giving the flood level and the depth of borings to the rock.
425. You have drawn the No. 2 design taking into consideration the highest flood level, and you presume that Mr. Hamand has done the same? Yes.
426. In the event of other floods occurring at the same level, the approaches to your bridge would be covered to a depth of about 8 feet, although such a flood would be unusual? Yes.

427.

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427. Is not the Lachlan River subject to partial floods? Yes.
428. Do not considerably more floods reach the bank of the river than pass over it? Yes.
429. Would a partial inundation of the country completely block all traffic on your bridge (No. 2 design)? Not unless the river were up to the banks. At the highest flood it is 8 feet over the flat.
430. Supposing the water were 2 feet over the flat, could the traffic get to your bridge? Yes; but it would be dangerous.
431. Supposing the water were within 6 feet of your flood level, would it be possible to get on to, and make use of, the bridge called No. 2 in Mr. Hamand's design? No, there would be 4 feet of water over it.
432. In your No. 2 design do you intend to carry traffic under ordinary circumstances only, or under extraordinary circumstances such as an unusually high flood? It is not designed to carry traffic at the highest flood; but it is necessary to keep the bridge up in order to ensure its safety.
433. But it is designed, I presume, to carry on the traffic as long as possible? Yes.
434. Mr. Hamand in his report, page 11, says:—"With regard to comparative estimate, I consider that No. 2 design if increased to the proper standard of strength would cost £30,000, instead of £26,500." Are the Committee to infer that you have used iron of less strength than the Board of Trade rules require, and have so reduced the price? Yes and no. The diagram which I have produced will show that in some cases we have gone above the Board of Trade rules, and in others below them.
435. You do not profess to have used material equal to that prescribed by the Board of Trade standard in designing your bridge? We have used material above the Board of Trade standard.
436. But taking the uniform rule, as laid down by the Board of Trade? No; we have not adhered to their rules.
437. In your design you have used above and below that standard to suit the purposes of the Department? Yes.
438. *Mr. O'Sullivan.*] You recommend No. 2 design;—what is the cost of it? £26,538.
439. And Mr. Hamand's amended design would cost £22,581? Yes.
440. What do you say is the departmental estimate for that design? We have not gone into it at all.
441. Did you not give the departmental estimate for Mr. Hamand's design? For his No. 1 design,—not for his No. 2.
442. I am talking now of Mr. Hamand's No. 1 design? Taking his design as it stands the Department estimate it at £54,650.
443. That is enlarging his design? Taking his design as it is there, without any enlargement.
444. By an enlargement of the dimensions of his design what would be the cost of it? £92,724.
445. Do you think it is requisite that a bridge of those dimensions should be built in order to accommodate the traffic? I think that there are many objections to a bridge of that type, and one of the principal is the risk of the scouring out of the foundations of the piers. The banks there are very liable to scour. When boys go down to dig up worms for fishing, and a fresh comes, holes several feet deep will be scoured out, and I think it would be a risky thing to construct such a bridge there unless the foundations were carried down further than shown on the plan. The piers would form a great resistance to the water, and the tendency would be to create a scour.
446. What do you estimate would be the life of your bridge? One hundred and fifty years for the iron work, twenty-five years for the main timbers, and twelve and a half years for the decking—that is, capitalised out with a sinking fund, it brings the capital value to £43,000. I think that that amount should be taken, in order to compare the bridge with a concrete bridge, and not the prime cost.
447. At £92,000? Yes.
448. Mr. Hamand in his report says, "I have only examined the No. 2 design, and that, so far as the information supplied to the Committee permits, and I observed that it is pervaded by the same error of over-straining timber;"—is that a fact? No. My reply to that is what I stated about the Board of Trade rules. We have actual data to go upon that the Board of Trade know nothing about in regard to the timber here.
449. Later on Mr. Hamand says, "Colonial timbers possess great strength, but they are correspondingly heavy, and in all large spans the weight of the material used is a very large component of the total weight to be sustained. I doubt if timber can be used, even for road bridges, economically when the spans exceed 60 or 70 feet?" Well, I must say in reply to that that we now use it economically with spans of 90 feet.
450. Mr. Hamand also says, "I am sure that the idea of corrupt benefit is impossible, and may be dismissed. The rolled joists referred to are more used by architects than by engineers, and are generally sold guaranteed to carry quiescent loads rather than to fill particular dimensions which are given for information more than for calculation purposes. The bracings, 5½ in. by 2¾ in. by ⅜ in., are somewhat an unusual size to specify. I am quite satisfied, however, that there is no corrupt motive underlying this matter, but that these unusual dimensions are rather due to the hair-splitting accuracy of some draughtsman more theoretical than practical"? I think that what I have already said as to the sizes of iron is a complete answer to that.
451. You consider that in your reply you have answered all the objections made by Mr. Hamand? Yes.
452. And you speak from the standpoint of experience in this colony? Yes.
453. *Mr. Trickett.*] What test is made of bridges in these colonies before they are used? It is not usual to test the road bridges, because there is a very great difficulty in obtaining sufficient weight to do it. A few years ago, when the Tæmas bridge was completed, for my own satisfaction I asked for authority to have it tested, as it was of a very light construction, but we had very great difficulty in getting sufficient loading. We required 100 tons, and it was as much as the district could do to find sufficient carts.
454. Do they not generally test them with live stock? Yes; both moving and stationary. They test them with three or four carts going over at a trot, and they also test them for the full load.
455. Do you not think that it is desirable to test the bridges here? The material is all very carefully tested, and the construction is very carefully watched, so that there is not very much to be gained by testing the bridge itself.
456. I suppose that these tests by soldiers and cattle being taken over the bridge are only applied in towns where there is a large concourse of people? Even near towns it is rarely that the bridges are built to take 120 lbs. to the square foot.
457. You do not think that it is necessary? No.

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458. *Dr. Garran.*] You say that the iron cylinders are merely skins for the concrete, and that the weight of the bridge rests upon the concrete? Yes.
459. So that if the iron skin were to die away the support would not be diminished in the slightest degree? No; but the bracing between the two cylinders, which is above water, would have to be maintained.
460. Is it braced into the solid part of the iron or on to the cap? It is riveted to the outside of the cylinder.
461. Supposing that the lower part of the cylinder were to wear away, what would become of the bracing? The top part can be kept clean and painted, and so long as that is done it forms a bracing between the columns, even if the lower part wears away.
462. What is the life of these iron skins, as you call them;—I suppose none have ever died? No.
463. If the support is on these concrete pillars, you use very much less concrete than Mr. Hamand would do in his old-fashioned concrete supports? Yes. We can go to greater depths.
464. And you have a less solid pillar—his would go right across the stream? Yes. We have only two cylindrical pillars.
465. Then the concrete you would use is less than what he would use? Yes.
466. He has to give a support underground instead of the girder above ground? Yes.
467. Is not that more wasteful? Yes.
468. Will he have to make proper dams for his foundations? He proposes to build the concrete caisons on a cutting edge of iron, and to sink them down in that way.
469. Do you think that that is trustworthy? Well, his specification is not complete enough for me to see exactly how he will do it. He does not say how he intends to model the concrete to form the piers.
470. Would you be able to see without the aid of a diver how these are settling on the ground? It would be simply an enclosed ring lowered down and the excavation would be carried on inside of it, just as we sink the iron cylinders—it would be a concrete caisson.
471. It is a concrete cylinder practically? Yes; it would be hollow inside, though not cylindrical. It would be more suitable for the superstructure which he intends to make. Of course, arches could not be very well struck off iron piers like these.
472. Do you think that an arched bridge is as suitable for a flooded river as one with horizontal girders? No; because of the obstruction which it gives.
473. It would offer very much more resistance to the water? Yes.
474. It would give less space for the water and timber to pass through? Yes.
475. Whatever merits concrete arches may have in certain places, you think that in this country they are quite unsuitable for flooded rivers? Generally—yes. In regard to an estimate for a suspension bridge I may say that when I concluded my evidence at Cowra, the Chairman of the Sectional Committee informed me that an estimate for a suspension bridge would not be required, and I have therefore done nothing further in the matter.
476. *Mr. Tonkin.*] You have been to Cowra and seen the bridge there, and you know, from what you have read, the amount of traffic that goes over it. Do you not think that the bridge that you propose to erect would be larger than is absolutely necessary, taking into consideration the fact that a railway will be constructed to Parkes or Forbes which will take away a very large amount of the traffic? I do not think so, for where the traffic is at all large a 20-feet roadway is not too wide. The only saving that would be made, if it were thought advisable, would be to leave out one of the footways.
477. Would that make much difference in the cost? No, only £3,000 or £4,000.*

* Note (*on revision*):—The actual cost of omitting one footway would be £1,322, not £3,000 or £4,000 as stated.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Iron Bridge at Cowra.

APPENDIX.

A.

PRECIS OF PAPERS IN RELATION TO THE PROPOSED BRIDGE OVER THE LACHLAN RIVER AT COWRA.

THE existing bridge at Cowra, which is a timber one, was opened for traffic in the year 1870. The first cost was £9,170 5s. 5d., and a considerable sum of money has since been expended upon it in maintenance and repairs.

In 1886 it was reported that considerable repairs and renewals had become necessary, that supporting tressels or cylinders were required, and that for the increasing pedestrian traffic a footway addition was desirable. For these purposes a sum of £3,000 was placed on the Estimates for 1887.

2/9/87.—Mr. Garland, M.L.A., drew attention to the circumstance that, although the money had been voted no steps had been taken to initiate the work. Mr. Bennett replied that the question was receiving consideration and that the swollen condition of the river precluded active work from being undertaken. It would appear that although the money had been voted for extensive works, only absolutely necessary repairs were carried out.

24/1/88.—The Road Superintendent reported that a portion of the bridge required an extensive overhaul, and that the structure was in so unsafe a condition that he had had to prohibit loads of over 7 tons from coming on to it.

26/3/88.—Shortly after, Mr. Secretary Sutherland visited Cowra, and was interviewed by a deputation regarding the bridge. They stated that it was in a dangerous condition and liable to collapse at any moment, in which case the trade of the town would be seriously crippled. A sum of £3,000 had been voted for iron cylinders; but little, if anything, had been done. The Minister inspected the bridge, and pronounced it to be insecure and too narrow for the traffic. He made a promise that on his return to Sydney some definite action should be taken.

A report accordingly was furnished by Mr. M'Donald to the effect that the main spans were sound and serviceable, but the 65 feet spans were unsafe and might fall over if heavy weights were placed on the bridge. Mr. Bennett gave instructions to execute absolutely necessary repairs, and to place tressels under the defection spans, which was done, and with good results.

20/8/88.—Succeeding August, Mr. G. Campbell wrote, requesting that such repairs might be executed as would enable teamsters to use the bridge with safety and confidence.

25/9/88.—Mr. M'Donnell submitted an estimate, as under, for the reconstruction of the bridge:—

Amount of estimate	£12,550
Less 1887 vote	3,000
Amount for Estimates	£9,550

But the amount apparently was not placed on the Estimates.

27/11/88.—Mr. Bennett minuted the Under Secretary to alter the amount on the Draft Loan Estimates for the bridge at Cowra from £24,000 to £19,600,* as it was considered desirable to have timber approaches.

5/3/89.—The Mayor of Cowra forwarded a copy of a report upon the bridge, prepared by the Municipal Works Committee, to the effect that they had inspected the bridge, and found one span and about 20 feet in fair condition, and that the remainder would have to be redecked, it being in many places unsafe for traffic. The tressels which had been placed under the three spans had, they said, been the salvation of the bridge. They appeared, however, to apprehend the possibility of mishap, for they recommended that, in anticipation of any emergency, the old ford should be made passable.

Mr. Bennett minuted that, pending a decision as to the erection of a new bridge, only repairs necessary for safety should be carried out. A memo. is on this paper to the effect that a sum of £19,600 had been placed on the Draft Estimates for a new bridge.

24/6/89.—The Mayor of Cowra wrote that the question of a new bridge had been under the consideration of the Works Department for a long time; that the existing structure had been so far condemned that notices had been posted, prohibiting loads of over 7 tons from passing over it, with the result that a quantity of wool had to be kept back, and that Mr. Sutherland had given a definite promise of a new bridge. The necessary levels had been taken, and he (the Mayor) believed £20,000 had been placed on the Estimates. He would be glad to know if a sufficient sum had been provided, and the Works Department should be urged to prompt action.

24/7/89.—In reply to categorical inquiries made by Mr. Macdonald, the Road Superintendent reported that the traffic over the river at Cowra was such as to justify an expenditure of £30,000 or £40,000 on a permanent iron bridge; that as the municipality was divided by the river, and a great portion of the traffic must pass over the bridge to and from the railway station, the new structure should be of iron, and should be built while the old bridge was available: That the construction of a railway to Forbes would tend to reduce the traffic over the bridge; but the extensive settlement which would inevitably take place would more than replace this; and that the width of deck, exclusive of footways, should not be less than 20 feet. The Superintendent added that two years previously he had reported that the bridge might collapse at any time, under stress of ordinary flood, and he felt bound now to repeat the warning.

A sum of £36,000 has been placed on the Loan Estimates for 1890 for a new bridge, which is thus described:—Main bridge, steel or iron; approaches, iron. Main bridge, continuous girder of three spans, 112 feet, 140 feet, and 112 feet; roadway 20 feet wide, with footway on each side; deck, iron, covered with tarred metal; approaches, similar class of deck; piers, iron, filled with concrete. C.A.B., 9/12/89.

Since the foregoing was written the details of the bridge have been determined, and the above description has been departed from in the following particulars:—The main bridge will consist of three spans of 169 feet, 216 feet, and 169 feet, and there will be four approach spans of 111 feet. Iron piers, filled with concrete, will be used for the main bridge. For the approaches, piers of concrete only. Footways will be 5 feet wide.—C.A.B.

The matter has since been reconsidered, and plans and estimates have been prepared for a composite bridge, to cost £26,537, and this is the scheme which will be submitted for the consideration of the Parliamentary Standing Committee on Public Works.—11/2/90.

* There is nothing in the papers to lead up to this.

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B.

[To Evidence of John Alexander M'Donald, Esq.]

APPENDICES TO PAPER READ BEFORE THE COMMITTEE, AND PUBLISHED WITH MR. M'DONALD'S EVIDENCE.

1.

COWRA ROAD DISTRICT—COWRA BRIDGE REPAIRS.

RETURN of expenses incurred in repairs to Cowra Bridge, from January 1st, 1885, to December 31st, 1889.

	£	s.	d.
1885—January 1st to December 31st	262	16	3
1886— Do do	216	16	6
1887— Do do	128	12	0
1888— Do do	283	3	7
1889— Do December 8th	168	5	0
1889—December 8th to December 31st, work in progress	160	0	0
	£1,219	13	4

Forwarded in conformity with instructions from the Commissioner and Engineer-in-Chief for Roads and Bridges of 18/12/89.

J. V. BARTLETT,
Road Superintendent.

Roads Office, Cowra, December 20th, 1889.

2.

TABLE showing traffic over Bridge, from December 19th to 25th (both inclusive), 1889.

Description of traffic.	Dec. 19th.	Dec. 20th.	Dec. 21st.	Dec. 22nd.	Dec. 23rd.	Dec. 24th.	Dec. 25th.	Totals.	Averages, daily.
Foot-passengers	161	243	315	258	258	475	382	2,092	300
Horsemen and women	126	119	177	43	135	242	215	1,057	150
Spring-carts and buggies	43	93	134	48	97	167	127	709	100
Horse drays	6	28	28	.....	38	66	10	176	25
Bullock drays	2	3	4	.....	1	.....	.....	10	1
Horse waggons	2	10	8	.....	16	6	.....	42	6
Bullock waggons	1	1	4	.....	13	2	.....	21	3
Sheep	50	400	.....	.....	.....	.....	.....	450*	65* / 600*
Cattle and horses	124	303	351	57	488	364	131	1,818	260
Bales of wool	.....	57	.....	.....	325	.....	.....	382†	55
Bags of grain	70	283	270	.....	425	273	.. ...	1,321‡	190
Goods outward, tons	.....	4	21	.....	12	4	.. ...	41§	6

* Over 200,000 annually. Daily average, nearly 600—10,000 to 20,000 at one time.
† Over 24,000 bales annually. Daily average for four months, about 200 bales.
‡ During good season 40,000 bags. Average for four months, about 330 bags daily.
§ Goods outwards average, about 30 tons per day.

3.

INFORMATION supplied by Railway Department showing Inwards and Outwards Goods Traffic at Cowra Railway Station, from 1st January to 31st December (both inclusive), 1889.

Months.	Inwards.	Outwards.	Total
	T. c. q.	T. c. q.	T. c. q.
January	479 13 1	97 10 1	577 3 2
February	546 1 1	50 14 1	596 15 2
March	662 14 1	116 10 0	779 4 1
April	448 19 3	106 14 0	555 13 3
May	619 18 2	112 9 1	732 7 3
June	387 15 1	120 13 2	508 8 3
July	580 1 2	122 15 1	702 16 3
August	554 18 0	86 17 1	641 15 1
September	527 12 1	163 14 3	691 7 0
October	615 5 2	1,050 10 1	1,665 15 3
November	603 9 0	1,244 5 2	1,847 14 2
December	576 16 0	1,360 11 2	1,937 7 2
Totals	6,603 4 2	4,633 5 3	11,236 10 1

4.

Department of Public Works, Sydney, 22 November, 1889.

AMENDED rates of tolls to be levied on all Ferries from 1st January, 1890.

	s.	d.
For every foot passenger (excepting children going to or returning from school)	0	1
For every horse, mare gelding, ass, or mule, drawing or not drawing	0	3
For every gig, buggy, waggon, dray, or other vehicle	0	6
For every ox or head of neat cattle, drawing or not drawing	0	2
For every sheep, lamb, pig, or goat, not exceeding 100 in number	0	0½
For every sheep, lamb, pig, or goat, exceeding 100 in number	0	0¼
Goods (not conveyed in vehicles) per cwt.	0	3

One charge to include passing and repassing once a day.

Persons riding or travelling in vehicles not to be charged toll as foot passengers.

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5.

RATES of Tolls levied at Bridges.

The following tolls were levied at the undermentioned bridges until abolished, 31 December, 1882:—

Penrith (abolished 1874), Pitnacre, Belmore, Dunmore, Windsor, and Richmond.

	s.	d.
Foot passengers, each	0	1
Vehicles, each	0	6
Horse, &c., drawing or not drawing, each	0	3
Ox or head of neat cattle drawing or not drawing, each	0	2
Sheep, lamb, pig, or goat, each	0	0½

On payment of one toll this bar can be passed any number of times on same day.

Dubbo and Wellington Bridges.

	s.	d.
Foot passengers, each	0	2
Vehicles, each	1	0
Horse, &c., drawing or not drawing, each	0	6
Ox, &c., drawing or not drawing, not exceeding 20 in number, each	0	4
Ox, &c., drawing or not drawing, exceeding 20 in number, each	0	2
Sheep, lambs, pigs, goats, each	0	0½

Persons riding or travelling in vehicles not to be charged as foot passengers.
Tolls to be charged on Sundays.

Rosel's Bridge and Balranald Bridge.

	s.	d.
Horse, &c., drawing or not drawing, each	0	4
Ox, &c., drawing or not drawing, each	0	3
Ox, &c., drawing or not drawing, exceeding twenty in number, each	0	2
Vehicles, each	1	0

Hay Bridge Bar.

This is the only bridge under Department where tolls are now levied, by arrangement with the Hay Municipal Council. They have lately applied to have tolls abolished. Matter is under consideration.

	s.	d.
Horse, &c., drawing or not drawing, each	0	2
Vehicles with two wheels, each	0	3
Vehicles with four wheels, each	0	6
Ox, &c., drawing or not drawing, each	0	2
Sheep, lambs, pigs, goats, at rate of per thousand	10	0

Albury Bridge.

Proclamation of amendment of tolls, 27 March, 1872.

	s.	d.
Vehicles	1	0
Horses, &c., drawing or not drawing, each	0	6
Ox or head of neat cattle, drawing or not drawing	0	4
Sheep, pig, goat, each	0	1

Gundagai Bridge.

Proclamation of amendment of tolls, 1 January, 1875.

	s.	d.
Vehicles	1	0
Horses, &c., drawing or not drawing	0	6
Oxen, drawing or not drawing, each	0	4
Oxen, drawing or not drawing, after first twenty	0	2
Sheep, &c., each	0	0½

Cowra Bridge.

Tolls proclaimed 30 October, 1871, to be collected from 1 December, 1871. Tolls abolished 27 September, 1872.

	s.	d.
Foot passengers, each	0	2
Vehicles, each	1	0
Horses, &c., drawing or not drawing, each	0	6
Oxen, &c., drawing or not drawing, each	0	4
Oxen, &c., drawing or not drawing, after first twenty, each	0	2
Sheep, &c., each	0	0½

Persons riding or travelling in vehicles not to be charged toll as foot passengers. Toll to be charged on Sundays as on other days.

6.

TABLE showing Estimated Value of Traffic at Cowra Bridge.

Description.	Daily.	Per annum.	Rate.	Amount.
				£
Foot passengers	300	109,500	1d.	456
Horsemen and women	150	54,750	3d.	684
Spring carts and buggies	100	36,500	9d.	1,368
Sheep	.....	200,000	¼d.	208
Cattle and horses	260	94,900	2d.	791
Total			£	3,507
Deduct wages of two collectors, printing tickets, and sundry expenses				507
Balance to credit			£	3,000

The above does not include 10,000 tons of goods conveyed in waggons or drays.

7.

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7.

DESIGN No. 1.

ESTIMATED cost, with iron deck and two footways.

CONTRACT I.

Quantities.		Item.	Rate.	Amount.		
				£	s.	d.
Main Bridge = £32,009.						
262	tons	Cast-iron in cylinders, handrail brackets, and ladder-bracing	£12 per ton	3,144	0	0
40	,,	Cast-iron in bed-plates, saddle-plates, rollers, and caps	£30 ,,	1,200	0	0
70	,,	Wrought-iron in cylinders and bracing, including rivets	£21 ,,	1,470	0	0
957	,,	Wrought-iron in main girders (including steel ⌊ covers), cross-girders, and wind-bracing	£21 ,,	20,097	0	0
281	,,	Wrought-iron in rolled girders, buckled-plates, deck-plates, and bulb T irons	£17 ,,	4,777	0	0
10	,,	Wrought-iron in handrail-standards and black bolts	£25 ,,	250	0	0
3	,,	Wrought-iron in turned bolts and set screws	£30 ,,	90	0	0
2	,,	Steel in pins	£32 ,,	64	0	0
9½	,,	Gas-pipe handrails	£30 ,,	285	0	0
1	,,	Pig lead	£1 per cwt.	20	0	0
10	cwt.	Sheet lead	3d. per lb.	280	0	0
.....		Paint, two coats, bulk sum	.....	300	0	0
4	.....	Lamp-posts	£8 each	32	0	0
Footways = £2,478						
37½	,,	Wrought-iron in cantilevers	£21 per ton	787	10	0
61½	,,	Wrought-iron in buckled plates and bulb T iron	£17 ,,	1,045	10	0
19	,,	Wrought-iron in gas-pipe handrails	£30 ,,	570	0	0
3	,,	Wrought-iron in handrail-standards	£25 ,,	75	0	0
		Total		£ 34,487	0	0

Total cost of bridge complete, with footways { Contract I. ..... £34,487; Contract II. 35,484

Total cost £69,971

By omitting footways (£4,775) the cost of bridge would be reduced to £65,196

7A.

ESTIMATED cost, with iron deck and two footways.

CONTRACT II.

Quantities.		Item.	Rate per	Amount.		
				£	s.	d.
Main Bridge ... £26,162 11s.						
252	tons	Fixing and sinking cast-iron cylinders, complete	£12 ton	3,024	0	0
564	cubic yds.	Excavation in cylinders, other than rock	£1 cubic yard	564	0	0
28	,,	,, ,, in rock	£10 ,,	280	0	0
837	,,	Concreting cylinders	£3 ,,	2,511	0	0
500	cubic ft.	Granite or bluestone in bedstones, set	15s. cubic foot	375	0	0
70	tons	Fixing wrought-iron in cylinders and bracing, complete	£10 ton	700	0	0
42	,,	Fixing cast-iron in bed-plates, saddle-plates, rollers, caps, and scuppers	£10 ,,	420	0	0
973	,,	Fixing wrought-iron and steel in main girders, cross-girders, wind-bracing, bolts, and set-screws	£10 ,,	9,730	0	0
281	,,	Fixing rolled girders, buckled plates, and bulb T iron	£10 ,,	2,810	0	0
15½	,,	Fixing handrail, including wrought-iron and cast-iron brackets	£10 ,,	155	0	0
1½	,,	Fixing lead	10s. cwt.	15	0	0
541	cubic yds.	Tarred metal	£1 cubic yard	541	0	0
950	cubic ft.	Hewn timber, in kerbs and sills	5s. cubic foot	237	10	0
.....		Tar (two coats)	.....	15	0	0
.....		Tar (three coats)	.....	10	0	0
.....		Paint (two coats)	.....	500	0	0
.....		Paint (three coats)	.....	80	0	0
630	cubic yds.	Excavation for piers and abutments, including unwatering	2s. 6d. cubic yd.	78	15	0
790	,,	Concrete ,, ,,	£3 ,,	2,370	0	0
256	,,	Masonry ,, ,,	£3 10s. ,,	896	0	0
309	,,	Hand-packed rubble	10s. ,,	154	10	0
10,437	,,	Embankment	1s. 4d. ,,	695	16	0
Footways £1,781 10s.						
37½	tons	Fixing wrought-iron in cantilevers	£10 ton	375	0	0
61½	,,	,, ,, buckled-plates and bulb T iron	£10 ,,	615	0	0
22	,,	,, ,, handrails and standards	£10 ,,	220	0	0
136	cubic yds.	Road metal	£1 cubic yard	136	0	0
57	,,	Masonry in abutments	£3 10s. ,,	199	10	0
16	,,	Concrete ,,	£3 ,,	48	0	0
38	,,	Excavation in abutments, including unwatering	2s. 6d. ,,	4	15	0
1,864	,,	Embankment	1s. 4d. ,,	124	5	0
118	,,	Rubble	10s. ,,	59	0	0
Contract I. Footways £2,478 Main Bridge £27,024 5s.						
1,635	tons	Railway carriage, Sydney to Cowra, of ironwork	£4 2s. 4d. ton	6,731	5	0
1,635	,,	Carriage, Cowra to site of bridge	3s. ton	245	0	0
950	cubic ft.	Timber carriage, railway, Sydney to Cowra	9d. cubic foot	36	0	0
950	,,	,, Cowra to site of bridge	3d. ,,	12	0	0
121	tons	Ironwork carriage, railway, Sydney to Cowra	£4 2s. 4d. ton	498	0	0
121	,,	,, Cowra to site of bridge	3s. ton	18	0	0
		Total		£ 35,484	6	0

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8.

DESIGN No. 1.

ESTIMATED cost, with timber deck and two footways

CONTRACT I.

	Quantities.	Item.	Rate.	Amount. £ s. d.
Main Bridge, £21,169.	262 tons	Cast-iron in cylinders, handrail-brackets, and ladder-bracing	£12 per ton	3,144 0 0
	40 ,,	Cast-iron in bed-plates, saddle-plates, rollers, and caps	£30 ,,	1,200 0 0
	70 ,,	Wrought-iron in cylinders and bracing, including rivets	£21 ,,	1,470 0 0
	670 ,,	Wrought-iron in main girders (including steel L covers), cross-girders, wind-bracing (including rivets).	£21 ,,	14,070 0 0
	14 ,,	Wrought-iron in handrail, standards, and black bolts	£25 ,,	350 0 0
	4 ,,	Wrought-iron in turned bolts and set-screws	£30 ,,	120 0 0
	2 ,,	Steel in turned pins	£32 ,,	64 0 0
	1 ,,	Pig-lead	£1 per cwt.	20 0 0
	0½ ,,	Sheet-lead	3d. per lb.	14 0 0
	9½ ,,	Gas-pipe handrails	£30 per ton	285 0 0
	.....	Paint (two coats)	.....	400 0 0
	4	Lamp-posts	£8 each	32 0 0
Footways, £1,457 10s.	37½ tons	Wrought-iron in cantilevers	£21 per ton	787 10 0
	19 ,,	Wrought-iron in handrails	£30 ,,	570 0 0
	4 ,,	Wrought-iron in handrail, standards and spikes	£25 ,,	100 0 0
		Total	£	22,626 10 0

Total cost of bridge complete, with footways { Contract I. £22,626 ; Contract II. 32,333

Total cost £54,959

By omitting footways (£4,385) the cost would be reduced to £50,574

8A.

ESTIMATED cost, with timber deck and two footways.

CONTRACT II.

	Quantities.	Item.	Rate.	Amount. £ s. d.
Main Bridge, £23,736 1s.	252 tons	Fixing and sinking cast-iron cylinders complete	£12 ton	3,024 0 0
	564 cubic yds.	Excavation in cylinders other than rock	£1 cubic yard	564 0 0
	28 ,,	Excavations in cylinders in rock	£10 ,,	280 0 0
	837 ,,	Concreting do	£3 ,,	2,511 0 0
	500 cubic ft.	Granite or bluestone in bedstones set	15s. cubic ft.	375 0 0
	70 tons	Fixing wrought-iron in cylinders and bracing complete	£10 ton	700 0 0
	42 ,,	Fixing cast-iron in bedplates, saddle-rollers, caps, and scuppers.	£10 ,,	420 0 0
	690 ,,	Fixing wrought-iron and steel in main girders (including cast-iron in ladder bracing), cross-girders, wind-bracing, bolts, and set screws.	£10 ,,	6,900 0 0
	15½ ,,	Fixing wrought-iron in handrails and wrought-iron and cast-iron brackets.	£10 ,,	155 0 0
	1½ ,,	Lead	10s. cwt.	15 0 0
	950 cubic ft.	Hewn timber in kerbs and sills	5s. cubic ft.	237 10 0
	13,000 ,,	Sawn timber in longitudinal girders and planking	5s. ,,	3,250 0 0
	.....	Tar, one coat	.....	60 0 0
	.....	Tar, three coats	.....	250 0 0
	.....	Paint, two coats	.....	700 0 0
	.....	Paint, three coats	.....	100 0 0
	630 cubic yds.	Excavation for abutments and piers	2s. 6d. cubic yd.	78 15 0
	790 ,,	Concrete do do	£3 ,,	2,370 0 0
	256 ,,	Masonry do do	£3 10s. ,,	896 0 0
	309 ,,	Handpacked rubble	10s. ,,	154 0 0
	10,437 ,,	Embankment	1s. 4d. ,,	695 16 0
Footways, £2,420 10s.	37½ tons	Fixing wrought-iron in cantilevers	£10 ton	375 0 0
	23 ,,	Fixing wrought-iron handrails. standards, and spikes	£10 ,,	230 0 0
	5,000 cubic ft.	Timber in deck and longitudinals	5s. cubic ft.	1,250 0 0
	57 cubic yds.	Masonry in abutments	£3 10s. cubic yd.	199 10 0
	16 ,,	Concrete do	£3 ,,	48 0 0
	38 ,,	Excavation, including unwatering	2s. 6d. ,,	4 15 0
	1,864 ,,	Embankment	1s. 4d. ,,	124 5 0
	118 ,,	Rubble	10s. ,,	59 0 0
	.....	Tar, one coat	.....	30 0 0
	.....	Tar, three coats	.....	100 0 0
Carriage— Main Bridge, £5,669.	1,165 tons	Ironwork, carriage railway Sydney to Cowra	£4 2s. 4d. ton	4,796 0 0
	.....	do do do to site	3s. ,,	175 0 0
	13,950 cubic ft.	Timber do do Sydney to Cowra	9d. cubic ft.	523 0 0
	.....	do do do to site	3d. ,,	174 0 0
Footways, £507.	60½ tons	Ironwork do do Sydney to Cowra	£4 2s. 4d. ton	249 0 0
	.....	do do do to site	3s. ,,	9 0 0
	5,000 cubic ft.	Timber do do Sydney to Cowra	9d. cubic. ft.	187 0 0
	.....	do do do to site	3d. ,,	62 0 0
		Total	£	32,332 11 0

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9.

No. 1 Design

Computation of Annual Charge on Proposed Designs (with footways), with interest 4 per cent.

	£	s	d
With footways, iron deck—			
Estimated cost	69,971	0	0
Interest and depreciation on at 4 per cent., compound interest, and life taken at 150 years, equivalent to 4·01 per cent. per annum	2,806	0	0
Painting every four years at 20s. per foot per annum	248	0	0
Total annual charge	3,054	0	0
Capital value taking interest at 4 per cent., £76,350.			
With footways, timber deck—			
Estimated cost, exclusive of deck	49,273	0	0
Estimated cost of deck	5,686	0	0
Interest and depreciation on £49,273, at 4 per cent. compound interest, and life taken at 150 years, equivalent to 4·01 per cent. per annum	1,976	0	0
Interest and depreciation on £5,686, at 4 per cent. compound interest, and life taken at 12½ years, equivalent to 10·33 per cent. per annum	587	0	0
Painting	248	0	0
Total annual charge	2,811	0	0
Capital value, taking interest at 4 per cent., £70,275.			

10.

Computation of Annual Charge on Proposed Designs (without footways), with interest 4 per cent.

	£	s.	d.
Iron deck without footways—			
Estimated cost	65,196	0	0
Interest and depreciation on £65,196, at 4 per cent. compound interest, and life taken at 150 years, equivalent to 4·01 per cent. per annum	2,614	0	0
Painting every four years at 20s. per foot per annum	248	0	0
Total annual charge	2,862	0	0
Capital value taking interest at 4 per cent., £71,550.			
Timber deck without footways—			
Estimated cost, exclusive of deck	46,389	0	0
Estimated cost of deck	4,185	0	0
Interest and depreciation on £46,774, at 4 per cent. compound interest, and life taken at 150 years, equivalent to 4·01 per cent. per annum	1,860	0	0
Interest and depreciation on £3,800, at 4 per cent. compound interest, and life taken at 12½ years, equivalent to 10·33 per cent. per annum	432	0	0
Painting	248	0	0
Total annual charge	2,540	0	
Capital value taking interest at 4 per cent., £63,500.			

11.

Design No. 2.

Estimated cost of composite Bridge on Cylinders, with two Footways.

Contract I.

	Quantities.	Item.	Rate.	Amount		
				£	s.	d.
Main Bridge, £6,847	114 tons 0 cwt	Cast-iron in cylinders	£12 per ton	1,368	0	0
	20 ,, 12 ,,	,, caps, bed-plates, shoes, etc., in trusses	£30 ,,	618	0	0
	64 ,, 0 ,,	Wrought-iron in cylinders and bracing, including rivets	£21 ,,	1,344	0	0
	63 ,, 8 ,,	,, suspension bolts, black bolts, straps, etc.	£25 ,,	1,585	10	0
	84 ,, 0 ,,	Steel in lower chords and cross-girders	£23 ,,	1,932	0	0
	3 ,, 18 ,,	,, cross-girders	£23 ,,	89	14	0
		Total		£6,936	14	0

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CONTRACT II.

	Quantities.	Item.	Rate.	Amount. £ s. d.
Main Bridge...£14,094.	117 tons 10 cwt.	Fixing and sinking cast-iron cylinders complete	£12 per ton	1,410 0 0
	229 cubic yds.	Excavation in cylinders other than rock	£1 per cubic yd.	229 0 0
	17 ,,	,, ,, in rock	£10 ,,	170 0 0
	265 cubic ft.	Granite in bedstones	15s. ,, ft.	199 0 0
	64 tons	Fixing wrought-iron in cylinders and bracing	£10 per ton	640 0 0
	20 ,, 12 cwt	,, cast-iron in caps, bed-plates, shoes, etc.	£10 ,,	206 0 0
	144 ,,	,, wrought-iron and steel, in trusses and piers	£10 ,,	1,440 0 0
	27,796 cubic ft.	Supply and fixing timber	5s. per cubic ft.	6,949 0 0
	1,932 lin. ft.	,, ,, round (including piles)	5s. per lineal ft.	483 0 0
	451 cubic yds.	Concreting cylinders	£3 per cubic yd.	1,353 0 0
		Tar, one coat	3d. square yd.	30 0 0
		,, three coats	9d. ,,	320 0 0
		Paint ,, ,,	1s. ,,	225 0 0
	3,974 cubic yds.	Embankment	1s. 4d. per c. yd.	265 0 0
	250 ,,	Rubble	10s. ,,	125 0 0
Carriage. Footways, Main Bridge, £2,963. £2,121	3 tons 18 cwt.	Fixing steel in cross-girders	£10 per ton	39 0 0
	8,328 cubic ft.	Supply and fixing timber	5s. per cubic ft.	2,082 0 0
	346 tons	Ironwork, carriage railway, Sydney to Cowra	£4 2s. 4d. per ton	1,440 0 0
	,,	,, ,, ,, to site	3s. per ton	52 0 0
	31,236 cubic ft.	Timber ,, ,, Sydney to Cowra	9d. per cubic ft.	1,171 0 0
	,,	,, ,, ,, to site	3d. ,,	390 0 0
Footways, £483.	3 tons 18 cwt.	Ironwork ,, ,, Sydney to Cowra	£4 2s. 4d. per ton	16 0 0
	,,	,, ,, ,, to site	3s. ,,	1 0 0
	8,328 cubic ft.	Timber ,, ,, Sydney to Cowra	9d. per cubic ft.	312 0 0
	,,	,, ,, ,, to site	3d. ,,	104 0 0
		Total		£19,601 0 0

Total cost of composite Bridge, with cylinders and two footways	Contract I....	£6,936 14 0
	Contract II....	19,601 0 0
Total cost		£26,537 14 0
Omitting footways (£2,644) the cost of bridge would be reduced to		£23,894 0 0

12.

DESIGN No. 2.

ESTIMATED cost of Composite Bridge on timber piers.

Total cost of cylinders, including carriage	£8,165
Do timber river piers do	2,450
Difference	£5,715
Total cost of composite bridge with timber piers and footways	£20,822
By omitting footways (£2,644) the cost of the bridge would be reduced to	18,178

13.

DESIGN No. 2.

COMPUTATION of Annual Charges on Proposed Design with Cylinders. Interest, 4 per cent.

With Footways—		
Estimated cost of cylinders, ironwork and steel		£15,147
Do timber in trusses and piers		8,111
Do do planking		3,380
		per annum
Interest and depreciation on £15,147, life 150 years = 4·01 %		= £607
Do 8,111, life 25 do = 6·40 %		= 519
Do 3,380, life 12½ do = 10·33 %		= 349
Painting every four years at 20s. per foot		= 260
Total annual charge		£1,735
Capital value at 4 % = £43,375.		
Without Footways—		
Estimated cost of cylinders, ironwork, and steel		£15,000
Do timber in trusses and piers		6,654
Do do planking		2,340
		per annum.
Interest and depreciation on £15,000, life 150 years = 4·01 %		= £601
Do 6,654, life 25 do = 6·4 %		= 426
Do 2,340, life 12½ do = 10·33 %		= 242
Painting		= 260
Total annual charge		£1,529
Capital value at 4 % = £38,225.		

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14.

DESIGN No. 2.

COMPUTATION of Annual Charges on Design with Timber Piers. Interest, 4 per cent.

With Footways—		
Estimated cost of ironwork and steel		£6,982
Do timber in trusses and piers		10,561
Do do planking		3,380
		per annum.
Interest and depreciation on £6,982, life 150 years = 4·01 %		= £280
Do 10,561, life 25 do = 6·40 %		= 676
Do 3,380, life 12½ do = 10·33 %		= 349
Painting every four years, at 20s. per foot		= 260
Total annual charge		£1,565
Capital value at 4 % = £39,125.		
Without Footways—		
Estimated cost of ironwork and steel		£6,836
Do timber in trusses and piers		9,103
Do do planking		2,340
		per annum.
Interest and depreciation on £6,836, life 150 years = 4·01 %		= £274
Do 9,103, life 25 do = 6·40 %		= 583
Do 2,340, life 12½ do = 10·33 %		= 242
Painting		= 260
Total annual charge		£1,359
Capital value at 4 % = £33,975.		

15.

DESIGN No. 2

COMPUTATION of Annual Charge on Proposed Design, with Cylinders. Interest, at 3½ per cent.

With Footways—		
Estimated cost of cylinders and ironwork		£15,147
Do timber in trusses and piers		8,111
Do do planking		3,380
		per annum.
Interest and depreciation on £15,147, life taken at 150 years = 3·52 %		= £533
Do do 8,111, do 25 do = 6·07 %		= 492
Do do 3,380, do 12½ do = 10·03 %		= 339
Painting every four years, at 20s. per foot		= 260
Total annual charge		£1,624
Capital value at 3½ per cent. = £46,400.		
Without Footways—		
Estimated cost of cylinders and ironwork		£15,000
Do timber in trusses and piers		6,654
Do do planking		2,340
		per annum.
Interest and depreciation on £15,000, life taken at 150 years = 3·52 %		= £528
Do do 6,654, do 25 do = 6·07 %		= 404
Do do 2,340, do 12½ do = 10·03 %		= 233
Painting		260
Total annual charge		£1,427
Capital value at 3½ per cent. = £40,771.		

16.

DESIGN No. 2.

COMPUTATION of Annual Charges on Design, with Timber Piers. Interest at 3½ per cent.

With Footways—		
Estimated cost of ironwork and steel		£ 6,982
Do timber in trusses and piers		10,561
Do do planking		3,380
		per annum.
Interest and depreciation on £ 6,982, life taken at 150 years = 3·52 %		= £246
Do do 10,561, do 25 do = 6·07 %		= 641
Do do 3,380, do 12½ do = 10·03 %		= 339
Painting every four years, at 20s. per foot		= 260
Total annual charge		£1,486
Capital value at 3½ per cent = £42,457.		
Without Footways—		
Estimated cost of ironwork		£6,836
Do timber in trusses and piers		9,103
Do do planking		2,340
		per annum.
Interest and depreciation on £6,836, life taken at 150 years = 3·52 %		= £241
Do do 9,103, do 25 do = 6·07 %		= 553
Do do 2,340, do 12½ do = 10·03 %		= 235
Painting		260
Total annual charge		£1,289
Capital value at 3½ per cent. = £36,829.		

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17.

DESIGN No. 3.

ESTIMATED cost of Truss Bridge with two footways.

CONTRACT I.

	Quantities.	Item.	Rate.	Amount.
				£ s. d.
Main Bridge, £3,417.	52 tons 14 cwt...	Cast-iron in cylinders	£12 ton	632 0 0
	17 ,, 2 ,, ...	Cast-iron in caps, bed-plates, shoes, &c.	£30 ,,	513 0 0
	32 ,, 0 ,, ...	Wrought-iron in cylinders and bracing	£21 ,,	672 0 0
	64 ,, 0 ,, ...	Wrought-iron suspension-bolts, black-bolts, &c.	£25 ,,	1,600 0 0
		Total ..... £		3,417 0 0

CONTRACT II.

	Quantities.	Item.	Rate.	Amount.
				£ s. d.
Main Bridge, £12,629.	53 tons	Fixing cast-iron in cylinders ...	£12 ton	636 0 0
	80 cubic yds.	Excavation in cylinders, other than rock	£1 cubic yd. ...	80 0 0
	8 ,, ...	Excavation in cylinders in rock	£10 ,, ...	80 0 0
	133 cubic ft...	Granite in bed-stones	15s. cubic ft. ...	100 0 0
	32 tons	Fixing wrought-iron in cylinders and bracing	£10 ton	320 0 0
	17 tons 2 cwt.	Fixing cast-iron in caps, bed-plates, and shoes, &c.	£10 ,,	171 0 0
	64 tons	Fixing wrought-iron in suspension-bolts, &c.	£10 ,,	640 0 0
	32,247 cubic ft...	Supply, and fixing timber	5s. cubic ft.	8,062 0 0
	3,677 lin. ft. ...	Supply, and fixing timber round (including piles)	5s. lin. ft.	919 0 0
	197 cubic yds.	Concreting cylinders	£3 cubic yd. ..	591 0 0
	.....	Tar, one coat	3d. square yd.	88 0 0
	.....	Tar, three coats	9d. ,, ...	381 0 0
	.....	Paint, three coats	1s. ,, ..	196 0 0
	3,678 cubic yds.	Embankment	1s. 4d. cubic yd.	245 0 0
	240 ,, ...	Rubble	10s. cubic yd. ...	120 0 0
Footways, 9,000 cubic ft.		Supply and fixing timber	5s. cubic ft.	2,250 0 0
Carriage—Main Bridge, £2,645.	166 tons	Ironwork, carriage railway, Sydney to Cowra	£4 2s. 4d. ton ...	683 0 0
	166 ,, ...	Ironwork, carriage railway, to site	3s. ton	25 0 0
	38,755 cubic ft...	Timber, carriage railway, Sydney to Cowra	9d. cubic ft.	1,453 0 0
Footways, £451.	38,755 ,, ...	Timber, carriage railway, to site	3d. ,, ...	484 0 0
	9,000 ,, ...	Timber, carriage railway, Sydney to Cowra	9d. ,, ...	338 0 0
	9,000 ,, ...	Timber, carriage railway, to site	3d. ,, ...	113 0 0
		Total ..... £		17,975 0 0

Total cost, truss bridge, with cylinders and footways, { Contract I....£3,417 / Contract II....17,975

Total cost..... £21,392

By omitting footways (£2,701) the cost of bridge would be roduced to £18,691

18.

DESIGN No. 3.

ESTIMATED cost of Truss Bridge on Timber Piers.

Total cost of cylinders complete	£3,611
Do timber piers complete	1,750
Difference	£1,861
Total cost of truss bridge with timber piers and footways.....	19,531
By omitting footways (£2,701) the cost would be reduced to	16,830

19.

DESIGN No. 3.

COMPUTATION of Annual Charges on Proposed Design with Cylinders. Interest, 4 per cent.

With Footways—							
Estimated cost of cylinders and ironwork							£7,773
Do timber in piers and trusses							10,239
Do do planking							3,380
							per annum.
Interest and depreciation on £7,773, life taken at 150 years = 4·01 %							= £312
Do do 10,239, do 25 do = 6·40 %							= 655
Do do 3,380, do 12½ do = 10·33 %							= 349
Painting every four years at 20s. per foot							= 260
						Total annual charge	£1,576
						Capital value at 4 per cent. = £39,400.	
Without Footways—							
Estimated cost of cylinders and ironwork							£7,773
Do timber in piers and trusses							8,578
Do do planking							2,340
							per annum.
Interest and depreciation on £7,773, life 150 years = 4·01 %							= £312
Do do 8,578, do 25 do = 6·40 %							= 549
Do do 2,340, do 12½ do = 10·33 %							= 242
Painting							= 260
						Total annual charge	£1,363
						Capital value at 4 per cent. = £34,075.	

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20.

DESIGN No. 3.

COMPUTATION of Annual Charges on Design with Timber Piers. Interest, 4 per cent.

With Footways—		
Estimated cost of ironwork		£4,162
Do timber in trusses and piers		11,989
Do do planking		3,380
		per annum.
Interest and depreciation on £4,162, life 150 years = 4·01 %		= £167
Do do 11,989, do 25 do = 6·40 %		= 767
Do do 3,380, do 12½ do = 10·33 %		= 349
Painting every four years, at 20s. per foot		= 260
Total annual charge		£1,543

Capital value at 4 per cent. = £38,575.

Without Footways—		
Estimated cost of ironwork		£4,162
Do timber in trusses and piers		10,328
Do do planking		2,340
		per annum.
Interest and depreciation on £4,162, life 150 years = 4·01 %		= £167
Do do 10,328, do 25 do = 6·40 %		= 661
Do do 2,340, do 12½ do = 10·33 %		= 242
Painting		= 260
Total annual charge		£1,330

Capital value at 4 per cent. = £33,250.

21.

DESIGN No. 3.

COMPUTATION of Annual Charges on Design with Cylinders. Interest at 3½ per cent.

With Footways—		
Estimated cost of cylinders and ironwork		£7,773
Do timber in trusses and piers		10,239
Do do planking		3,380
		per annum.
Interest and depreciation on £7,773, life taken at 150 years = 3·52 %		= £274
Do do 10,239, do 25 do = 6·07 %		= 622
Do do 3,380, do 12½ do = 10·03 %		= 339
Painting every 4 years, at 20s. per foot		= 260
Total annual charge		£1,495

Capital value at 3½ per cent. = £42,714.

Without Footways—		
Estimated cost of cylinders and ironwork		£7,773
Do timber in trusses and piers		8,578
Do do planking		2,340
		per annum.
Interest and depreciation on £7,773, life taken at 150 years = 3·52 %		= £274
Do do 8,578, do 25 do = 6·07 %		= 521
Do do 2,340, do 12½ do = 10·03 %		= 235
Painting		= 260
Total annual charge		£1,290

Capital value at 3½ per cent. = £36,857.

22.

DESIGN No. 3.

COMPUTATION of Annual Charges on Proposed Design with timber piers. Interest, 3½ per cent.

With Footways—		
Estimated cost of ironwork		£4,162
Do timber in trusses and piers		11,989
Do do planking		3,380
		per annum.
Interest and depreciation on £4,162, life taken at 150 years = 3·52 %		= £146
Do do 11,989, do 25 = 6·07 %		= 728
Do do 3,380, do 12½ = 10·03 %		= 339
Painting every four years, at 20s. per foot		260
Total annual charges		1,473

Capital value at 3½ % = £42,086.

Without Footways—		
Estimated cost of ironwork		£4,162
Do do timber in tresses and piers		10,328
Do do do planking		2,340
		per annum.
Interest and depreciation on £4,162, life taken at 150 years = 3·52 %		= £146
Do do 10,328, do 25 = 6·07 %		= 627
Do do 2,340, do 12½ = 10·03 %		= 235
Painting		= 260
Total annual charge		1,268

Capital value at 3½ % = £36,229.

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23.

COWRA BRIDGE.

SUMMARY of Prime Costs, Capital Values and Annual Charges calculated at 4 and 3½ per cents.

	Prime Cost.	At 4 %.		At 3½ %.	
	£	£	£	£	£
Iron Bridge, iron deck with footways	69,971	3,054	76,350	2,711	77,457
Do timber deck with footways	54,959	2,811	70,275	2,552	72,914
Do iron deck without footways	65,196	2,862	71,550	2,543	72,657
Do timber deck without footways	50,574	2,540	63,500	2,301	65,743
Composite bridge with cylinders and footways	26,538	1,735	43,375	1,624	46,400
Do with cylinders and without footways	23,894	1,529	38,225	1,427	40,771
Do with timber piers and footways	20,822	1,565	39,125	1,486	42,457
Do with timber piers and without footways	18,178	1,359	33,975	1,289	36,829
Timber bridge with cylinders and footways	21,392	1,576	39,400	1,495	42,714
Do with cylinders and without footways	18,691	1,363	34,075	1,290	36,857
Do with timber piers and footways	19,531	1,543	38,575	1,473	42,086
Do with timber piers and without footways	16,830	1,330	33,250	1,268	36,229

JOHN A. M'DONALD,
Engineer for Bridges, M.I.C.E., M.I.M.E.

C.

REPORT BY ARTHUR S. HAMAND, Esq.

Cowra Bridge.

Gentlemen, Sydney, 31st March, 1890.

Early in this month I visited Cowra. I carefully examined the existing bridge, its situation, and that of the proposed new bridge, and investigated what materials were obtainable in the district for the erection of a new bridge.

The existing bridge is in a most unsatisfactory state. The only sound part of it is that portion of the superstructure forming the three 130 feet trusses, and the design of this bridge and its present condition are a timely commentary upon the middle paragraph in the "introductory" part of Mr. M'Donald's statement relating to timber work.

These three 130 feet trusses are in every particular exact copies of a type very common in the United States, in use for single track railway bridges. The timber in these trusses must have been carefully selected, and, I am informed, was stacked on the ground two years prior to being used. All the parts have been carefully fitted and put together, and the bolts have been tightened at every opportunity to take up shrinkage; and the point to which I particularly desire to draw attention is that no member of these trusses has ever been overstrained, and consequently the trusses retain the shape in which they were originally built, and are now apparently as good as they were twenty years ago.

The rest of the bridge is a great contrast to these trusses. There is a surplus of timber in one place, and a great deficiency in another. I might go over the whole bridge with the same result, but confine myself to two instances.

The piers carrying the 130 feet spans are of no greater scantling than the piers supporting the 65 feet spans, yet, in addition to having about three times the weight to carry, the piers of the larger spans are twice the height of those carrying the 65 feet openings. Either the piers of the 65 feet spans are of six times the strength required, or the river piers are of only one-sixth the necessary strength. Another example I take from the 65 feet trusses: The working stress on the stretcher beam at top of the queen truss is 36 tons, while the safe stress on the timber used is 15 tons. What wonder that these trusses have gone quite out of shape and have to be propped? The natural consequence of straining timber so severely is that the ends give way, throwing the beams out of line, and inducing new and abnormal stresses, which open splits and shakes in the timber, and cause rapid destruction of it.

I have considered the possibility of renewing and widening the existing bridge; but its position, and the angle at which the piers stand to the current of flood water are not in its favour. I think also, to do it effectually would involve an outlay not far short of £20,000; but on account of the excellent condition of the 130 feet trusses it is only with reluctance I have concluded it is better to build a new bridge.

In reference to the three designs submitted to the Committee, it seems desirable to point out that the spans in each of the three designs being different, no comparison of their cost can be made without taking the variation in the spans into account. The use of different materials can only be compared fairly when the spans are the same. Assuming design No. 2, the one recommended by the Department, as a basis, the difference in the size of spans would, in the same material, alone account for a decrease in cost of design No. 3 of about 15 per cent. on design No. 2, and an increase of about the same for No. 1 over No. 2 design.

I have only examined No. 2. design, and that, so far as the information supplied to the Committee permits, and I observe that it is pervaded by the same error of over-straining timber. For instance, in the polygonal trusses, the middle members of the top boom provide for a stress (according to the strength of ironbark given by Mr. M'Donald) not exceeding 89 tons, whereas they should carry 120 tons. The 89 tons is based on the ultimate strength of ironbark under compression, given by Mr. M'Donald in his statement as 4½ tons = 9,520 lb. per square inch of section, and taking the factor of safety at 8, as allowed for timber by the British Board of Trade. Professor Rankine, a good authority, recommends 10 as the factor of safety in timber structures. If, however, the usual practice is followed, the constant for ironbark would be taken as 7,140 lb. only per square inch as a fairer average, and then with 8 as the factor of safety, the section of timber in the top boom which should carry 120 tons, is only capable of bearing a load of 67 tons.

The subject is of so much importance that I may explain that "8 as a factor of safety" means that in order to provide for, not so much the absolute security as the safe endurance of timber structures, they should never be loaded with more than one-eighth of the average breaking weight of the particular kind of timber being used. In the case of timber, the tests for determining strengths are mostly carried out on small specimens which are carefully selected. Timber varies so much in strength that pieces taken from opposite sides of the same log will often give results differing in amount 50 per cent. To allow for these differences, knots, and other defects, which it is impossible to discover in timber of large scantling, it is usual for engineers to take as a constant for rupture the breaking-weight as determined from small pieces, or picked specimens diminished by one-fourth; so that for ironbark the 9,520 lb. would be reduced to 7,140 lb. as a working average, and all timber is dealt with in the same practical way.

It has further been determined by a series of practical experiments that if a given breaking-weight ruptures a material when applied within a short period, a very much smaller weight will produce rupture if applied repeatedly, or for a longer period, and one of the chief points aimed at in well considered designs is the apportionment of the stresses in such a manner as to prevent what is termed the "fatigue stress" from ever being reached. With the load so limited, or the material so apportioned, the load may be applied to any material an indefinite number of times without injury. For timber used in all permanent and important works, it is the general practice to limit the load to one-eighth of the determined average breaking-weight.

The live-load provided for in the submitted designs is only two-thirds of that allowed for in British works of a similar nature. It is considered that the most trying strain on road bridges is occasioned by the passage of a regiment of soldiers, and 112 lb., sometimes 120 lb., is taken as the working load per square foot. I am disposed to think that a team of bullocks, with their rythmical tread, and a load of 10 or 11 tons, is a much more severe trial to a bridge, especially a wooden one.

On the whole, then, it would seem that, in addition to providing only for a light working load, that reduced load is permitted to produce much heavier stresses on the section of timber used than is customary with engineers of experience. This is sufficient to account for the difficulty in finding a timber bridge which has not gone out of shape, or which does not give unmistakable evidence of being over-strained. Over-straining timber probably shortens its life by at least one-half.

Colonial,

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Colonial timbers possess great strength, but they are correspondingly heavy, and in all large spans the weight of the material used is a very large component of the total weight to be sustained. I doubt if timber can be used, even for road bridges, economically when the spans exceed 60 or 70 feet.

With regard to comparative estimate, I consider that No. 2 design, if increased to the proper standard of strength, would cost £30,000 instead of £26,500, and that for a fair comparison with No. 1 design, £4,500 should be added, making it £34,500; and to compare No. 2 with No. 3, £4,500 should be deducted, making it £25,500, on account of the variation in spans. No. 3 design would, no doubt, also, require more timber to bring it up to standard strength.

In relation to the iron bridge, when before the Sectional Committee at Cowra, I was asked some questions about the dimensions of some of the iron, and it has been plainly intimated that some of the iron is specified of peculiar dimensions, with the object of throwing the contract for it into the hands of particular firms, for the corrupt benefit of someone within the Department. Perhaps it will come with more weight from me, as an outsider, when I say that I am sure that the idea of corrupt benefit is impossible and may be dismissed. The rolled joists referred to are more used by architects than by engineers, and are generally sold guaranteed to carry stated quiescent loads, rather than to fulfil particular dimensions, which are given for information more than for calculation purposes. The bracings, 5½ in. x 2⅞ in. x $\frac{5}{16}$ in., are somewhat an unusual size to specify. Each brace increases in stress as its distance from the centre of the girder increases; but it is not usual to vary the section of iron used for differences involving only a pound or two of iron, as the change is very troublesome to the manufacturer, involving fresh templates, &c. Rather than do this the manufacturer would prefer to continue the stronger section at his own cost until a difference was reached, making it worth while to alter the section; that is to say, the drawing would not be strictly adhered to, as being unpractical. I am quite satisfied, however, that there is no corrupt motive underlying this matter, but that these unusual dimensions are rather due to the hair-splitting accuracy of some draughtsman more theoretical than practical.

I now come to the design, which I submit herewith, together with an estimate and summarised specification for a bridge at Cowra, which, for the most part, will speak for themselves. I have provided a width between the parapets of 25 feet, which may be divided into an 18 feet carriage-way and 7 feet footpath.

The aggregate width of water-way in the existing bridge is 710 feet, and as the fastest current during flood time has been timed at 6 miles an hour, the existing water-way, so far as extent goes, may be considered sufficient. The designs submitted by the Department provide for 960 feet of water-way, and for raising the roadway 9 feet higher than at present.

With a raised bridge, I consider 840 feet ample water-way, and have so drawn it; and, having regard to the spans and their disposition, I think the water-way of my design is fully equal to that provided in No. 2 design. As the specification shows, I propose to build the whole bridge of concrete, part in mass, and part in block concrete. The blocks would be used in those parts where it would be inconvenient to wait for the hardening of the concrete where deposited in mass.

Although I submit this design, it is only to enable the Committee to compare its cost, &c., with iron and timber. I do not recommend it, because I think a concrete bridge at a lower level will answer all the purposes of the traffic of the district, and cost very much less. In a few days I will send in the design for the smaller bridge.

To the Chairman and Members of
the Parliamentary Standing Committee on Public Works.

I have, &c.,
ARTHUR S. HAMAND.

Cowra Bridge.

Abridged Specification.

The work to which this specification relates is the erection, completion, and maintenance, during the stipulated period after completion, to the satisfaction of the engineer, of a bridge for carrying the main road over the River Lachlan at Cowra. It includes the provision by the contractor of every sort of material, plant, &c., that may be requisite or incidental to the due execution of the work as well as the imposition of such tests of the strengths of cement and concrete as in the judgment of the engineer may be required.

The foundations are intended to be carried to the several depths shown on the drawing; but the contractor will have to sink the foundations in all cases to such depth as, in the opinion of the engineer, the nature of the ground renders necessary. The river piers are intended to be founded upon the rock.

The river pier foundations are to be built in the following manner:—A curb is to be formed, of the shape of the outside of the pier, with a cutting edge of wrought-iron 12 inches deep by ½ inch thick, to the inside of which plate is to be riveted iron plate 3 feet broad and ½ inch thick, with the lower edge so bent that the ½ inch plate is set at an angle of 45 degrees with the vertical ½ inch plate, as per sketch of section V. Upon this V-shaped curb is to be built a wall of concrete 2 feet 6 inches thick, forming a hollow pier, and is to be continued to such height as may be necessary. The whole hollow pier is to be then sunk gradually by excavating the interior, when its own weight will cause it to descend until a hard bottom is reached. Pumping will not be insisted on either during excavation or filling the pier solid with concrete after the bottom is reached. If necessary, the descent of the concrete caisson must be guided and regulated in the usual manner, and when an approved bottom is reached the centre of the pier is to be carefully filled with concrete, which, if the foundation is free from water, is to be specially well rammed. The base of the pier should be rather larger than the part above, to diminish friction in sinking.

The whole of the bridge is to be built of concrete of the same kind and proportion of materials. Approved cement one part by measure to four parts of either hard granite or trap broken to approved size, and two parts of clean coarse sand. It is of great importance that the stone and sand should be as free of dirt, dust, and earthy or clayey particles as possible, and every possible precaution to attain this end must be taken by screening, washing, or otherwise.

The materials, after being measured, are to be mixed upon a platform twice, dry, and, after being slightly wetted, again twice mixed before being deposited in place, which is to be done where mass concrete is used, in even layers, not exceeding 6 inches thick, in order to secure facility for tight ramming of it. The concrete, in all cases, is to be mixed with as small a quantity of water as is workable, and special attention will be insisted on to its effectual consolidation by heavy ramming.

That part of the arches which stands at an angle exceeding 40 degrees with the horizontal will be built of concrete blocks, made in moulds six months previously. These blocks will be of convenient dimensions, and of regular sizes throughout; but so that each block is the full depth or thickness of the arch.

The centering of the river span must be made strong enough to carry the arch when supported from the ends only, for which purpose corbellings on the piers may be made. Generally, the design and structure of the centerings, as well as the arrangements for slackening them, must be approved by the engineer. The contractor will be required to provide, at his own expense, all moulds, centerings, timbering, &c., required, and no payment will be made to him in respect of anything but the net quantities of work actually executed, at the rates set out in his schedule of prices.

Cowra Bridge.

Estimate of Cost.

Description.	Quantity.	Price.	Amount.
	c. yds.	s. d.	£. s. d.
Excavation	2,900	3 4	483 6 8
Masonry concrete	13,492	44 0	29,682 8 0
Allow for river foundations	.....	.....	2,000 0 0
Allow for centering moulds, &c.	.....	.....	3,500 0 0
Filling to arches	7,500	2 6	937 10 0
Metalling	626	6 0	187 16 0
Embankment, as in No. 2 design	.....	.....	695 16 0
	Total.....		37,486 16 8

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Cowra Bridge.

Comparative Estimates for Materials.

Description.	Prime Cost.	At 3½ per cent.	
		Annual Charge.	Capitalised Value.
	£	£	£
Masonry concrete	37,487	.....	37,487
Timber bridge (cylinders and foot-ways), No. 3 design	21,392	1,495	42,714
Composite bridge, do. do., No. 2 design	26,538	1,624	46,400
The same, if of standard strength	30,000	1,834	52,400
Iron bridge (iron deck and foot-ways)	69,971	2,711	77,457

Comparison of the ultimate average Crushing loads for Brickwork, Concrete, &c.

Concrete, six months old	60 tons per square foot.
Do. twelve months old	97 ,,
Brickwork, good in cement	35 ,,
Rubble masonry, in mortar	25 ,,

Cowra Bridge.

Gentlemen, Sydney, 8 April, 1890.

As proposed in my report dated the 31st ultimo, upon this subject, I now beg leave to submit an amended design for a concrete masonry bridge over the River Lachlan at Cowra, which will be equally available for traffic at all times as the bridges of which the designs have been previously submitted. In times of flood this bridge will remain dry as long as the lower part of the town of Cowra and the main roads approaching it from the west remain above water, and there appears to be no advantage to the locality or the traffic in raising a bridge above this level; although, no doubt, for a timber structure with its buoyancy, and for an iron bridge with its lattice net-work, it would be prudent to build them with their superstructures raised above flood-level, which course would be adopted for the greater security of the structure, and not for any benefit to the traffic.

In the design now submitted it will be observed that the western half of the bridge is at a lower level than the eastern half. This is to allow one half to become submerged before the other half, in case of extremely high floods. It is not intended to furnish the bridge with parapets, but a light railing on either side which, when required, can be laid flat by withdrawing pins from its stays. The roadway throughout the bridge would be finished in concrete, so that there would be no metalling to be washed away.

At the site of the existing bridge the river is narrower, and the banks are much steeper, than at the position selected for the erection of the new one which I have marked upon the plan, and I recommend to be a little further south than where proposed by the Department. There will consequently be much more waterway in the new bridge than is afforded by the existing one, and at the same time less obstruction to the current caused by the piers being set parallel with its flow. The river at the point recommended is both wider and shallower (as the presence of the ford indicates) than at any other point within some distance either up or down the stream, so that there would be in any case less velocity and pressure of water here than elsewhere.

Accompanying the drawing is an estimate of cost of the amended design, amounting to £22,581, while the cheapest design for a bridge with footways put before the Committee by the Department is of the capitalised value of £42,086.

The bridge can be built in sandstone masonry for about the same amount as in concrete; but I prefer the latter for two reasons: Within twelve months from its erection the concrete will be twice as strong as the sandstone, and the use of concrete does not entail the necessity of employing so much skilled labour, the difficulty of obtaining which in the country districts sometimes causes delay and loss to contractors.

In making this amended design I have endeavoured to discard the ideas embodied in the previous plans, and have thought the matter out with a simple regard to the actual necessities of the situation.

To the Chairman and Members of the Parliamentary Standing Committee on Public Works.

I have, &c.,
ARTHUR S. HAMAND.

Cowra Bridge.—Amended Design.

Estimate of Cost.

Description.	Quantity.	Price.	Amount.
		s. d.	£ s. d.
Excavation	1,650 c. yds.	3 4	275 0 0
Concrete	7,800 ,, ,,	45 0	17,550 0 0
Allow for foundations	.....	.....	2,000 0 0
Centering, &c.	.....	.....	2,500 0 0
Embankment	.....	.....	100 0 0
Fencing	520 lin. yds.	6 0	156 0 0
	Total...	.....	22,581 0 0

D.

STATEMENT FROM THE COMMISSIONER AND ENGINEER-IN-CHIEF FOR ROADS AND BRIDGES ON MR. A. S. HAMAND'S REPORT.

Dear Sir, Roads and Bridges Department, Sydney, 6 May, 1890.

I am sorry I am not well enough to go in and give further evidence on the Cowra Bridge, but I expect Mr. M'Donald has said all that is necessary on the subject, and given sufficiently strong reasons against the adoption of either of Mr. Hamand's designs. His high-level bridge, even on his own figures, is very costly; but I am satisfied his estimate is quite wrong. For an ordinary structure, without the risk and difficulties of erection in a river subject to floods, at least 50 per cent. would have to be added to his estimate; but, when the latter is taken into account, it is very difficult to say what the cost would be. Sinking a concrete foundation in the bed of a river is a very costly operation, and subject to such risks that a contractor would require a very large sum to cover "contingencies."

With regard to his low-level structure I cannot see how any sane man could propose such a thing.

Granting, for argument's sake, that a low-level bridge would be the proper one to erect (a supposition which, I think, it is not likely will be endorsed), it is, I think, patent to any one that the design should be of such a character as to offer the least possible obstruction to the current; in fact, to be as spider-web like as possible, to enable, as far as possible, all floating timber and other *débris* to pass on.

The design submitted is to all intents and purposes a dam, or certainly would, after the first flood, become one, the natural consequences of which would be either the flooding of the town, the carrying away of the bridge, or, more than likely, first one and then the other.

I am still of opinion that the composite design would be the best one to adopt, and trust the Committee will view the matter in the same light.

The Secretary, Public Works Committee.

I am, &c.,
ROBT. HICKSON,
Commissioner and Engineer-in-Chief.

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E.

ROADS AND BRIDGES DEPARTMENT.

LEADING TYPE DESIGNS

OF

IRON AND TIMBER BRIDGES

THROUGHOUT THE WORLD.

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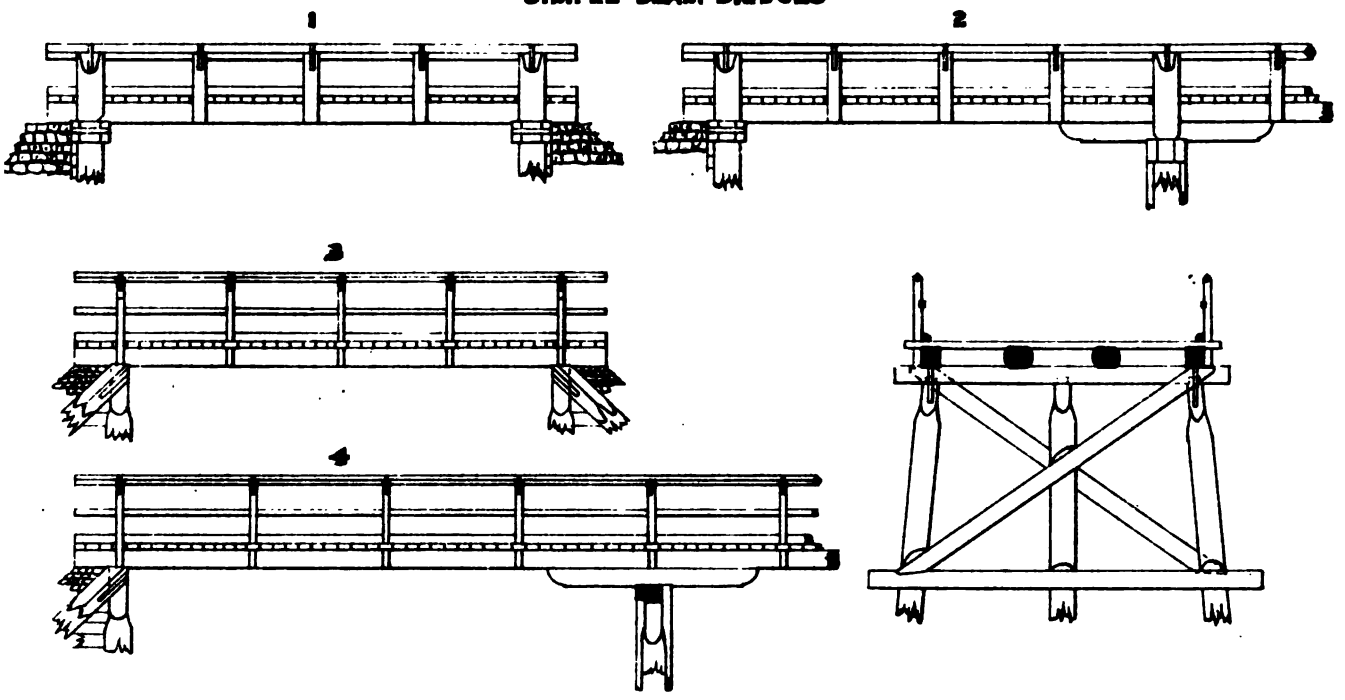
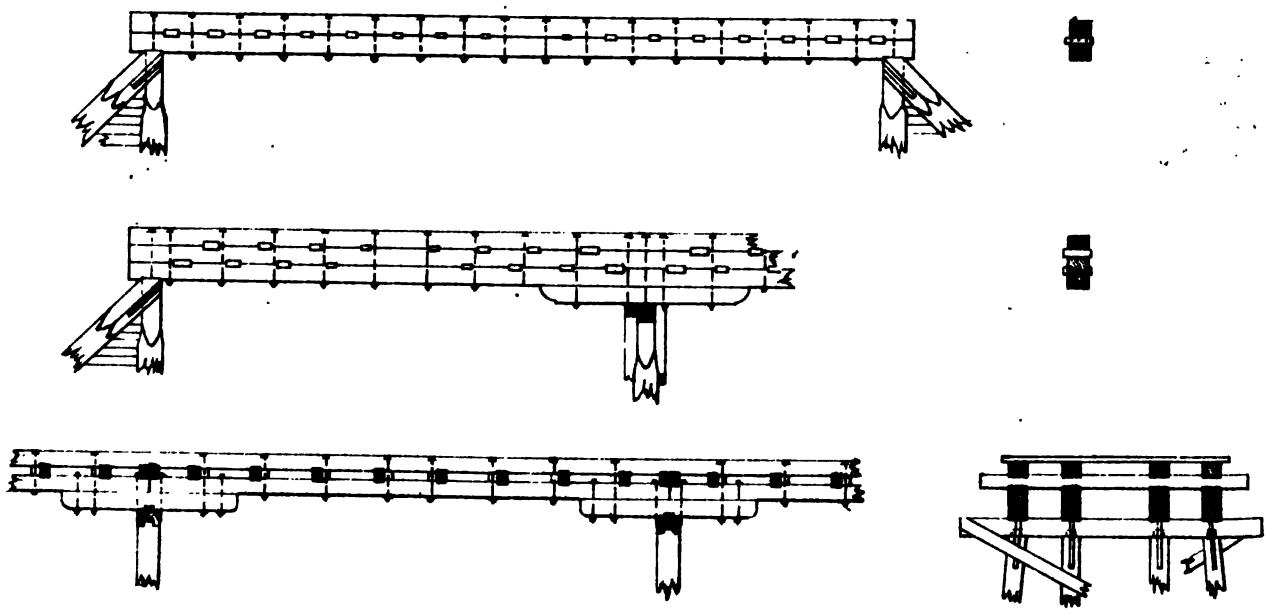
TIMBER BRIDGES

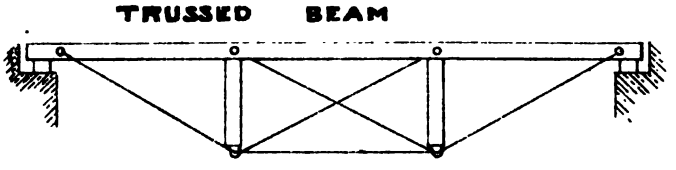
SIMPLE BEAM BRIDGES



COMPOUND BEAM BRIDGES



TRUSSED BEAM



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TIMBER BRIDGES.

SIMPLE BEAM.

Either (1) with or (2) without corbels, for low level.
(Do. (3) do. (4) do. for high level.
Spans: 25 to 40 feet.
Example: Used as type design in Roads Department, N.S.W.

COMPOUND BEAMS.

Either with or without corbels for high or low level.
Spans: 25 to 50 feet.
Example: Pudman Creek Bridge, N.S.W.

TRUSSED BEAM.

Tension members either timber or iron.
Spans: 25 to 60 feet.

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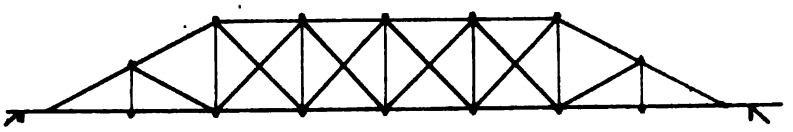
TIMBER BRIDGES *Continued*

TRUSS BRIDGES

1



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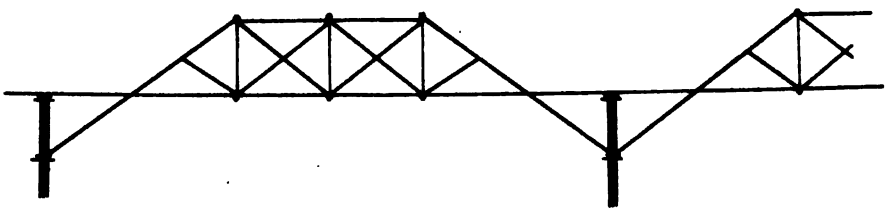
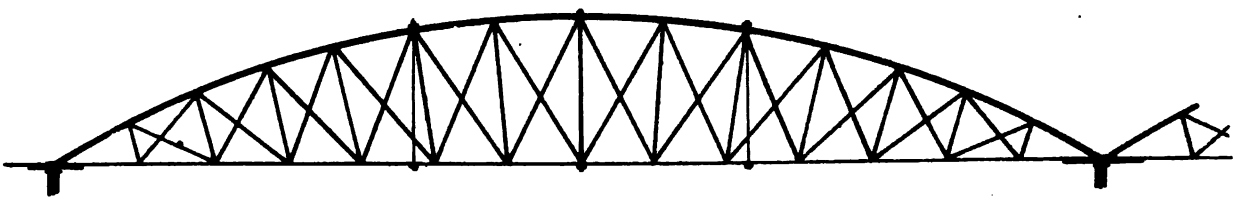
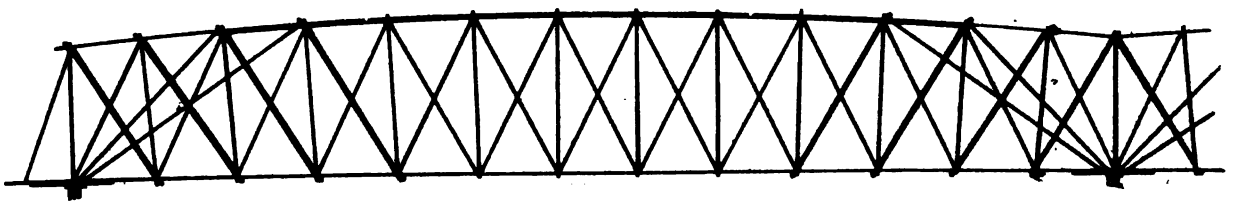


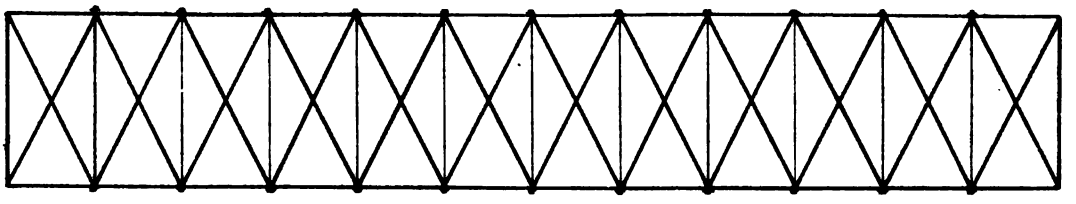
LAMINATED BOWSTRING



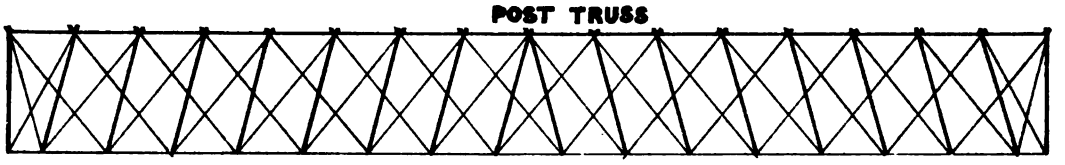
McCALLUM TRUSS



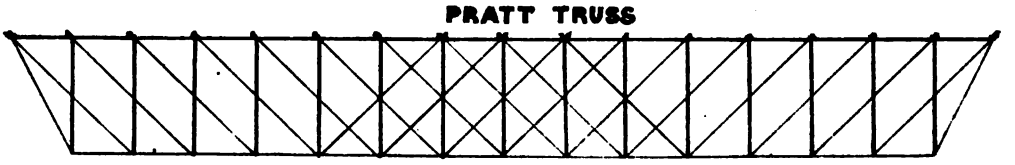
HOWE TRUSS



POST TRUSS



PRATT TRUSS



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TIMBER BRIDGES—(*continued.*)

TRUSS BRIDGES.

Vertical tension members iron.
Spans: 50 to 130 feet.
Example: No. 1 used as type design in Roads Department, N.S.W.

LAMINATED BOWSTRING.

Span: 130 feet.
Example: Union Bridge, over Murray River, N.S.W.

AMERICAN TRUSSES: M'CALLUM, HOWE, POST, AND PRATT.

Spans: Up to 200 feet
Example: Cowra Bridge, over Lachlan River, N.S.W.

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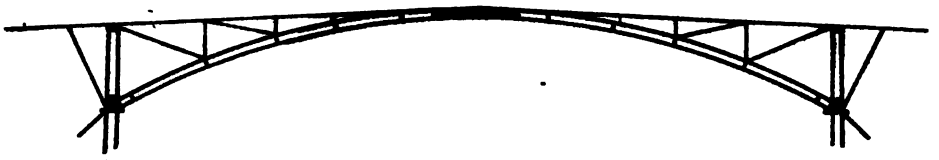
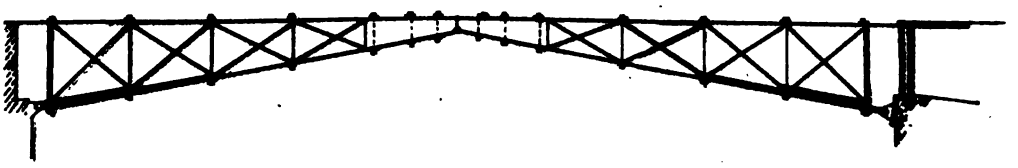
TIMBER BRIDGES *Continued*

LAMINATED BRACED ARCH

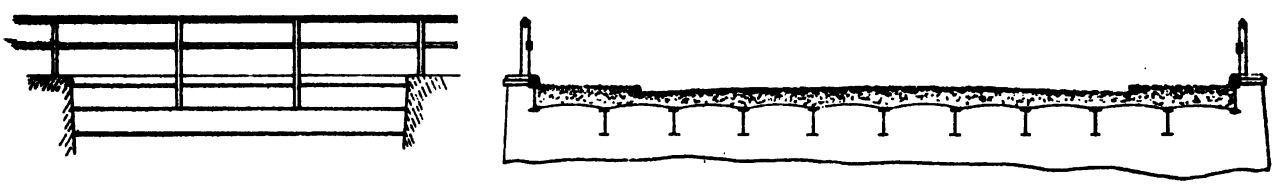


3 HINGED BRACED ARCH

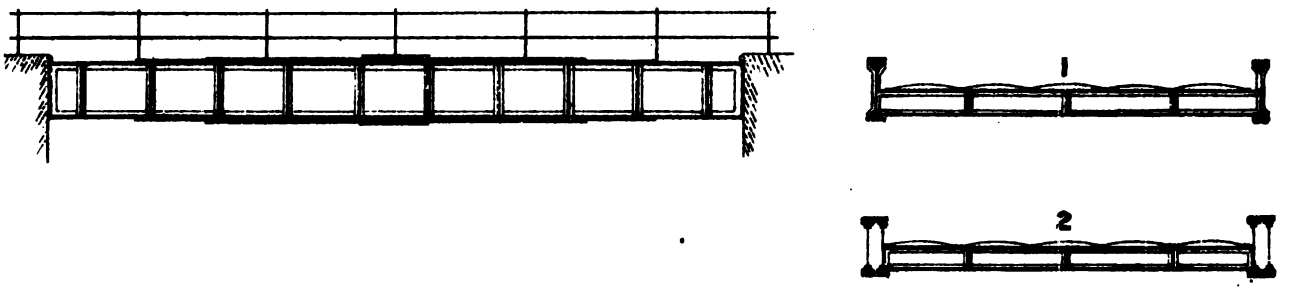


IRON BRIDGES

ROLLED BEAM BRIDGES



BUILT BEAM BRIDGE



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TIMBER BRIDGES—(*continued.*)

LAMINATED BRACED ARCH.

Spans: 50 to 90 feet.

Example: Palmer's Channel Bridge, over Lower Clarence River, N.S.W.

THREE-HINGED BRACED ARCH.

Spans up to 200 feet.

Example: Broughton Creek Bridge, N.S.W.

IRON BRIDGES.

ROLLED BEAM BRIDGES.

Spans: 7 to 27 feet.

Example: Used as type design in Roads Department, N.S.W.

BUILT BEAM BRIDGES.

Spans: 20 to 100 feet.

Example: Martin's Inn Bridge, N.S.W.

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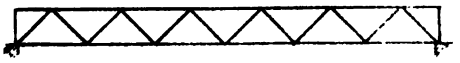
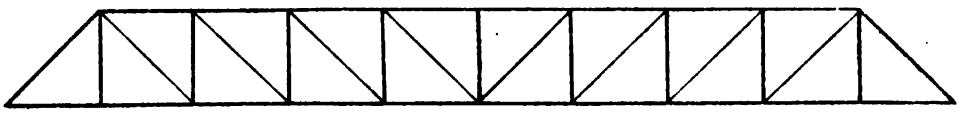
IRON BRIDGES *Continued*

INVERTED WARREN GIRDER

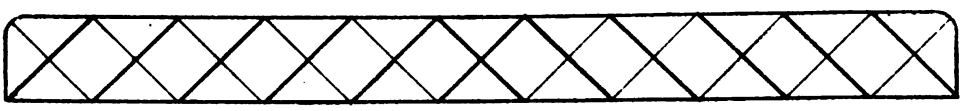


WARREN GIRDER

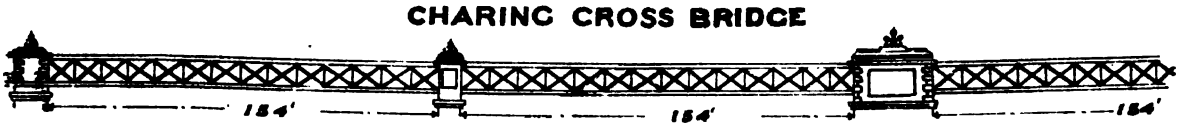
ORDINARY TRIANGULAR TRUSS



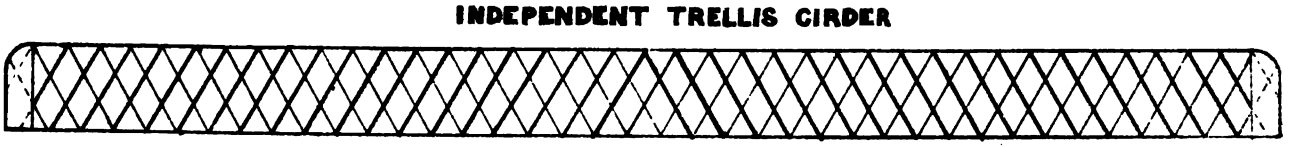
INDEPENDENT LATTICE GIRDER



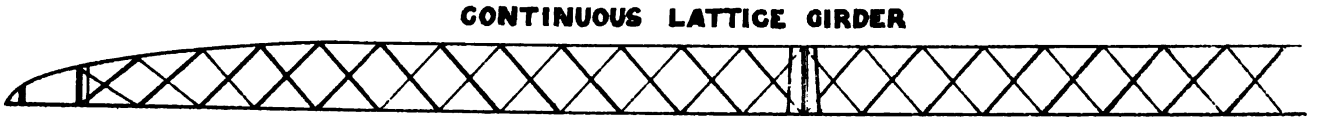
CHARING CROSS BRIDGE



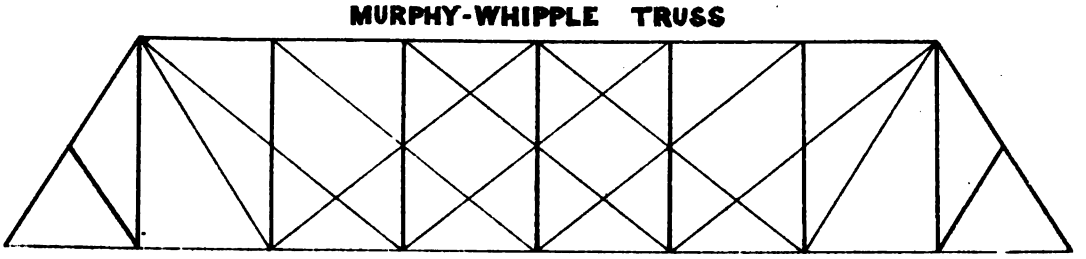
INDEPENDENT TRELLIS GIRDER



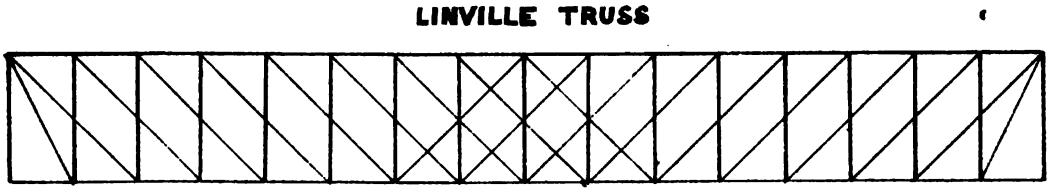
CONTINUOUS LATTICE GIRDER



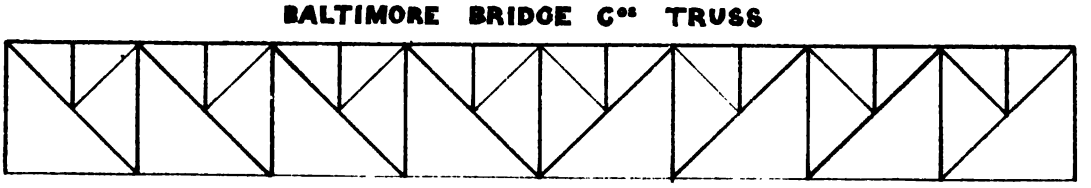
MURPHY-WHIPPLE TRUSS



LINVILLE TRUSS



BALTIMORE BRIDGE Co's TRUSS



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IRON BRIDGES—(*continued.*)

WARREN GIRDERS.

Spans: 40 to 130 feet.

Examples: Railway Bridges between Parramatta and Blacktown, N.S.W.

ORDINARY TRIANGULAR TRUSS.

Spans: 40 to 130 feet.

Example; Bathurst Bridge, over Macquarie River, N.S.W.

INDEPENDENT LATTICE GIRDER.

Spans: 60 to 420 feet.

Example: Wilcannia Bridge, N.S.W.

INDEPENDENT LATTICE GIRDER, WITH PIN CONNECTIONS.

Spans: 60 to 420 feet.

Example: Charing Cross Bridge, England.

INDEPENDENT TRELLIS GIRDER.

Span: 60 to 420 feet.

Example; Yass Bridge, N.S.W.

CONTINUOUS LATTICE GIRDER.

Central spans: 60 to 400 feet.

Example: Used as type design in Roads Department, N.S.W.

MURPHY-WHIPPLE TRUSS.

Spans: 120 to 500 feet.

Example; Nowra Bridge, N.S.W.

LINVILLE TRUSS.

Spans: 120 to 500 feet.

Example: Ohio River Bridge, America.

BALTIMORE BRIDGE CO.'S TRUSS.

Spans: 125 feet.

Example: Mount Union Bridge, America.

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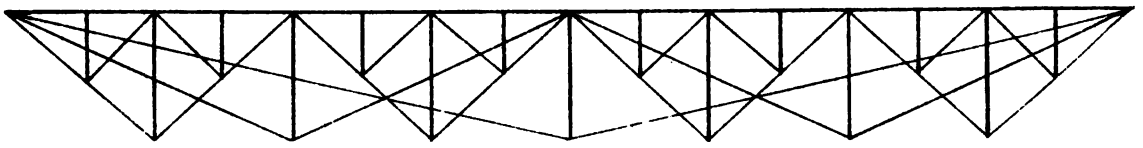
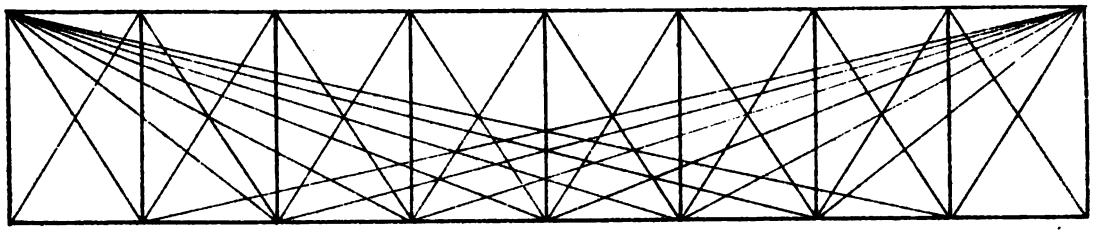
IRON BRIDGES *Continued*

FINK TRUSS



BOLLMAN TRUSS



UNION BRIDGE CO'S TRUSS

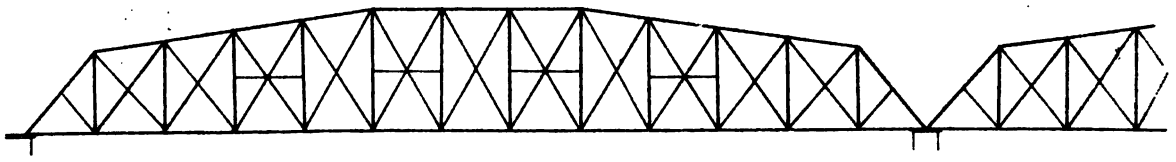
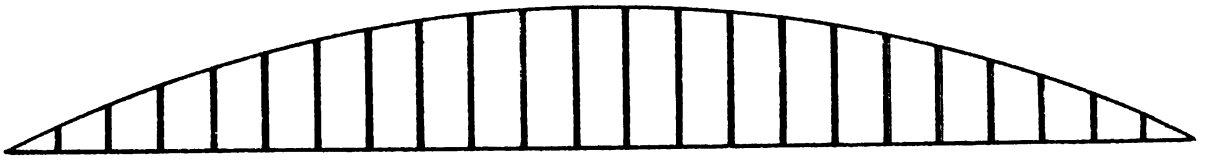
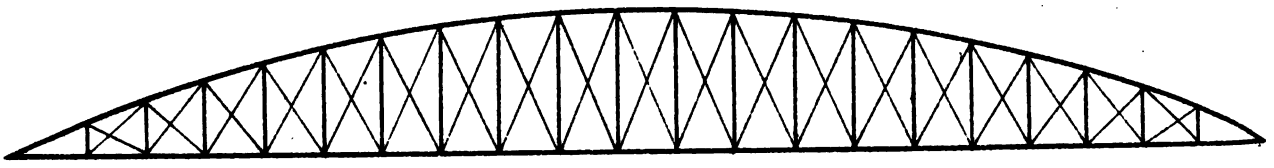


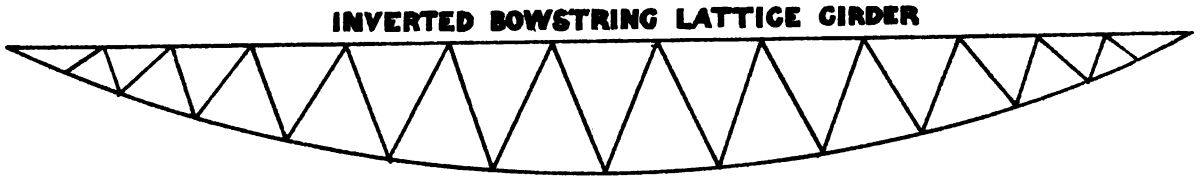
PLATE WEB BOWSTRING GIRDER



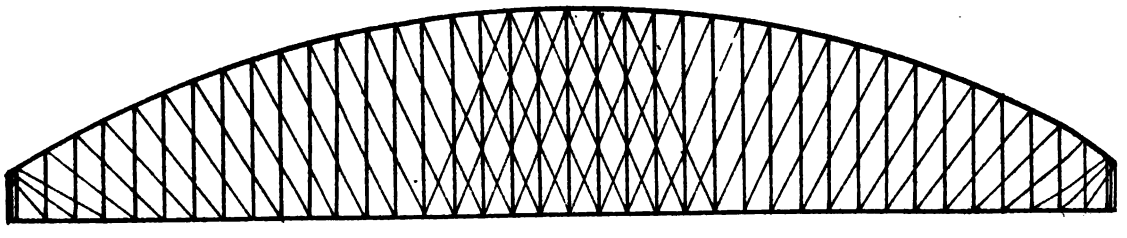
LATTICE BOWSTRING GIRDER



INVERTED BOWSTRING LATTICE GIRDER



TRUNCATED BOWSTRING GIRDER



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IRON BRIDGES—(*continued.*)

FINK TRUSS.

Spans: 140 to 300 feet.

Example: Green River Bridge, America.

BOLLMAN TRUSS.

Spans: 80 to 200 feet.

Example: Bollman Bridge, America.

UNION BRIDGE CO.'S TRUSS.

Spans: Up to 500 feet.

Example: Hawkesbury River Bridge, N.S.W.

PLATE WEB BOWSTRING GIRDER.

Spans: 60 to 135 feet.

Example: Goole Canal Bridge, England.

LATTICE BOWSTRING GIRDER.

Spans: 60 to 200 feet.

Example: Shannon Bridge, Ireland.

INVERTED LATTICE BOWSTRING GIRDER.

Spans: 60 to 200 feet.

TRUNCATED BOWSTRING.

Spans: 60 to 500 feet.

Example: Kuilenberg Bridge, Holland.

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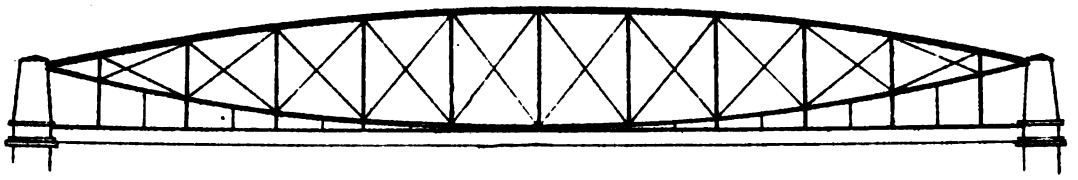
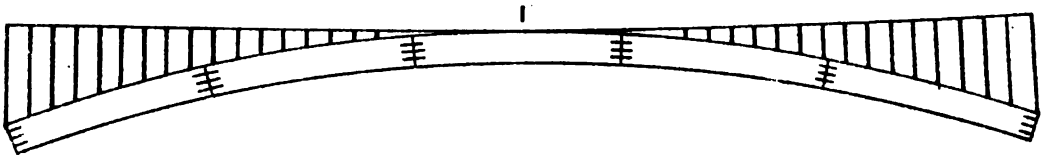
IRON BRIDGES *Continued*

LENTICULAR GIRDER



RIGID ARCH PLATE WEB

1



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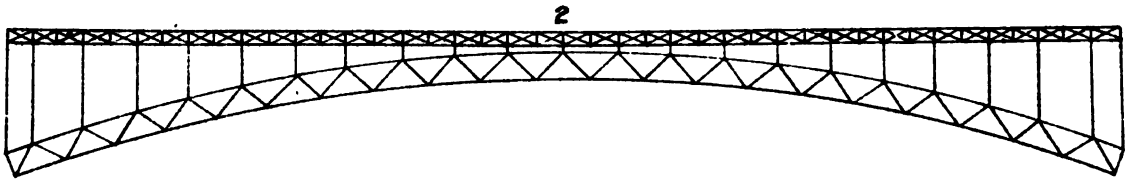
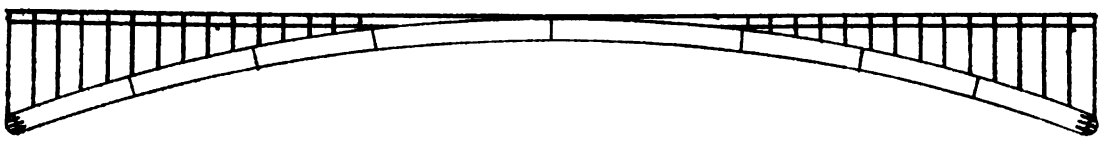


2-HINGED ARCH PLATE WEB

1



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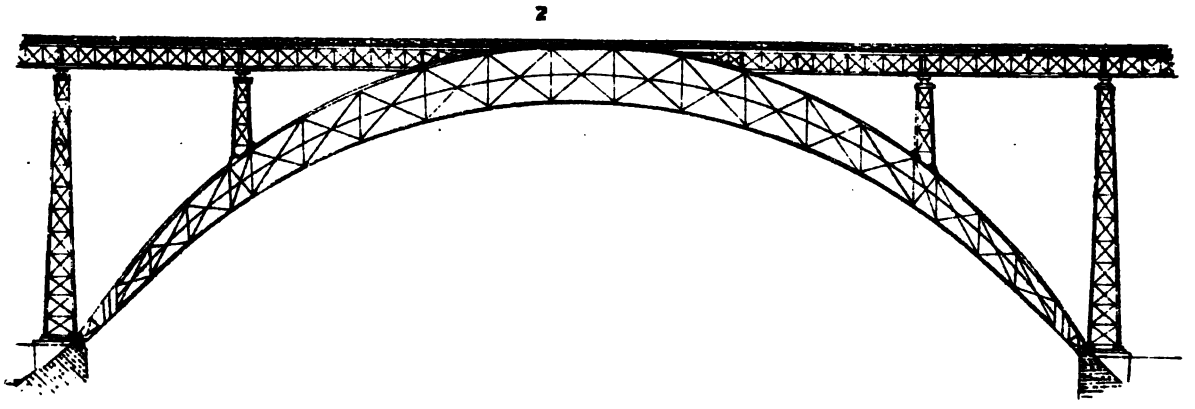
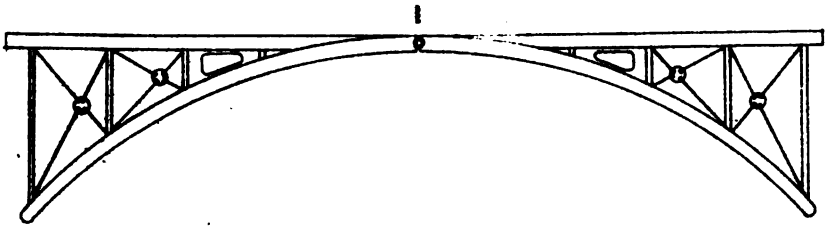


3 HINGED BRACED ARCH PLATE WEB

1



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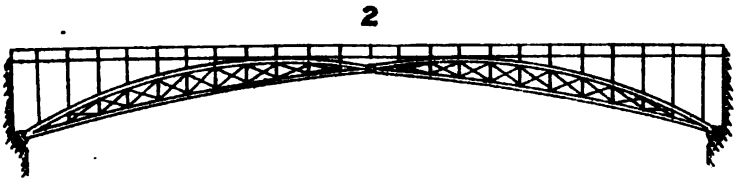

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IRON BRIDGES—(*continued.*)

LENTICULAR GIRDER.

Spans: 345 to 455 feet.

Example: Royal Albert Bridge, Saltash, England.

RIGID ARCH, PLATE OR LATTICE WEB.

Spans: 170 to 500 feet.

Examples: No. 1, Rochester Bridge, England; No. 2, St. Louis Bridge, America.

TWO-HINGED ARCH, PLATE OR LATTICE WEB.

Spans: 200 to 525 feet.

Examples: No. 1, Victoria Bridge, England; No. 2, Bridge over River Douro, Spain.

THREE-HINGED ARCH, PLATE OR LATTICE WEB.

Spans: 45 to 500 feet.

Examples: No. 1, Smollet-street Bridge, Albury, N.S.W.; No. 2, Fidler's Design.

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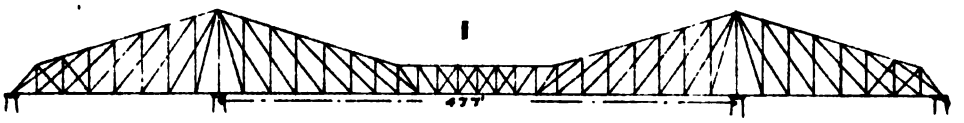
IRON BRIDGES *Continued*

CANTILEVER BRIDGES

1



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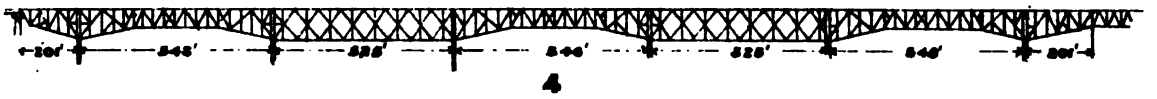

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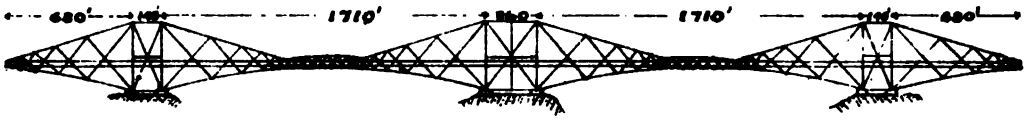
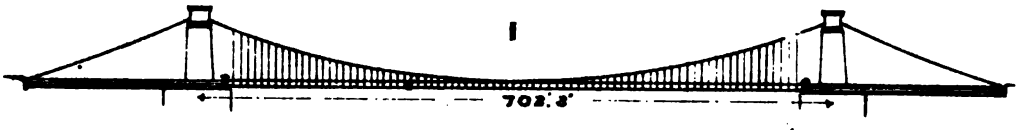


SUSPENSION BRIDGES

1



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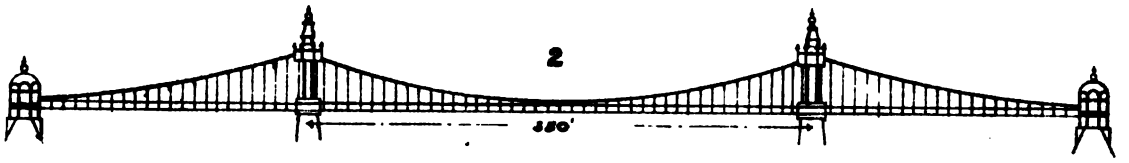

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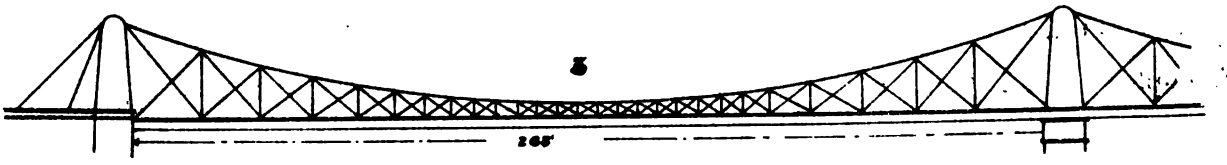

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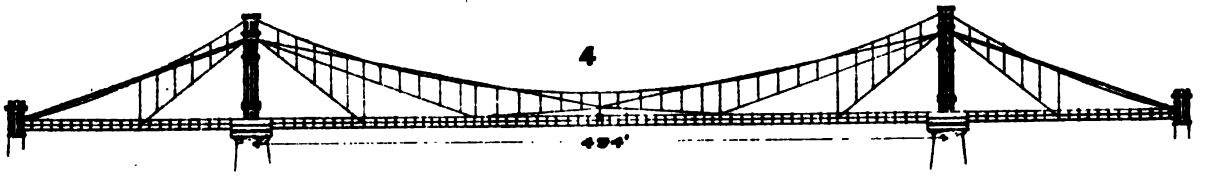

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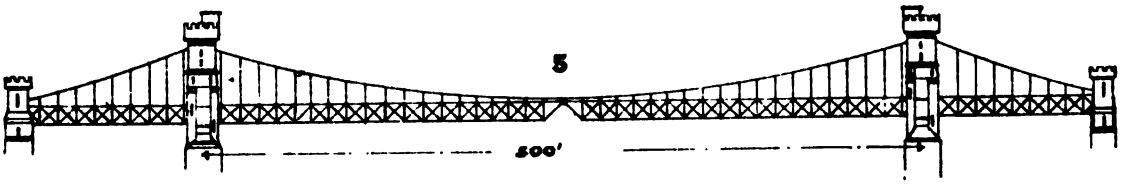

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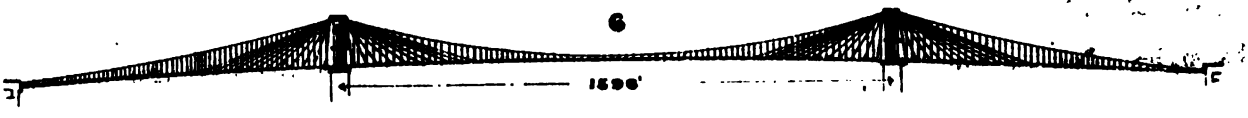

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IRON BRIDGES—(*continued.*)

CANTILEVER BRIDGES.

No. 1. St. John's River Bridge, central span, 477 feet, America.

No. 2. Niagara Bridge, do. 470 „ do.

No. 3. Poughkeepsie Bridge, do. 546 „ do.

No. 4. Forth Bridge, do. 1,710 „ Scotland.

SUSPENSION BRIDGES.

No. 1. Clifton Bridge, central span, 702 feet, England.

No. 2. Chelsea Bridge, do. 350 „ do.

No. 3. Lambeth Bridge, do. 280 „ d

No. 4. Francis Joseph Bridge, central span, 494 feet, Austria.

No. 5. North Sydney Bridge, do. 500 „ N.S.W.

No. 6. Brooklyn Bridge, do. 1,596 „ America.

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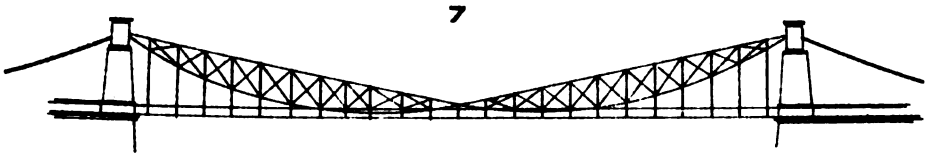
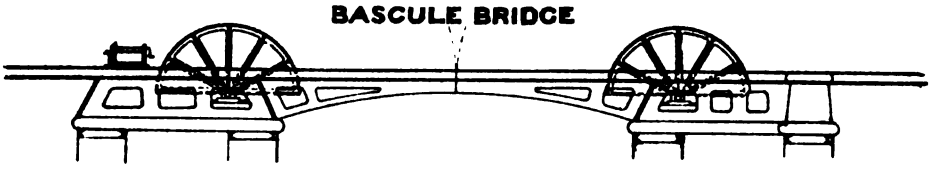
IRON BRIDGES *(continued)*

7



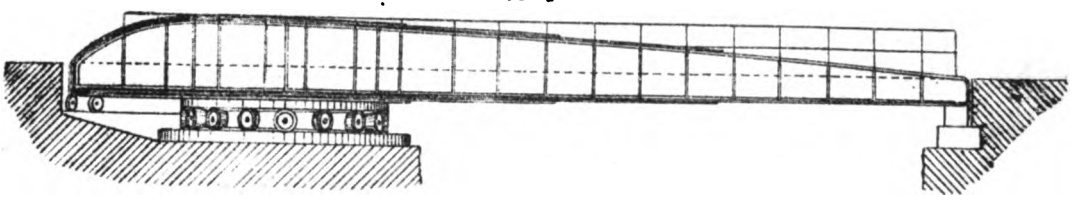
OPENING BRIDGES

BASCULE BRIDGE



LEAF SWING BRIDGE

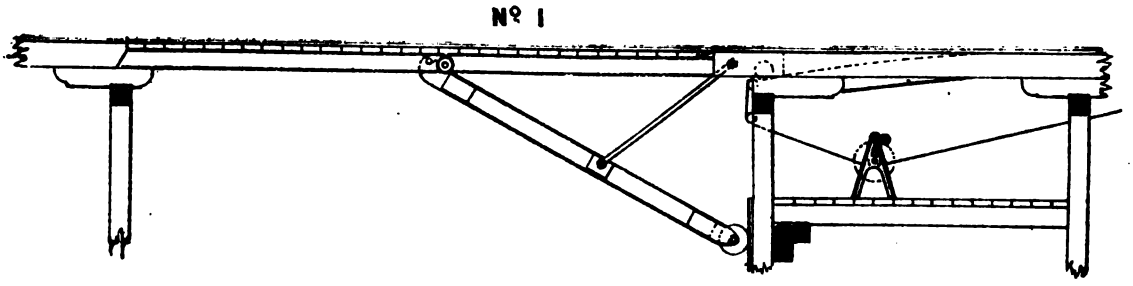
N° 1



2

TRAVERSE BRIDGES

Nº 1



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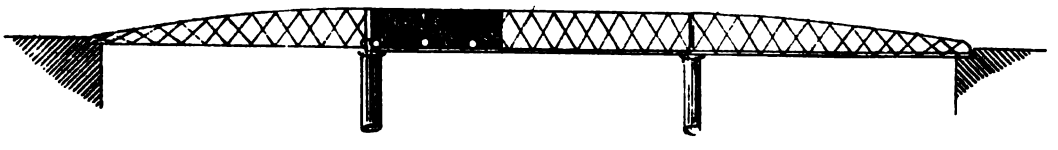

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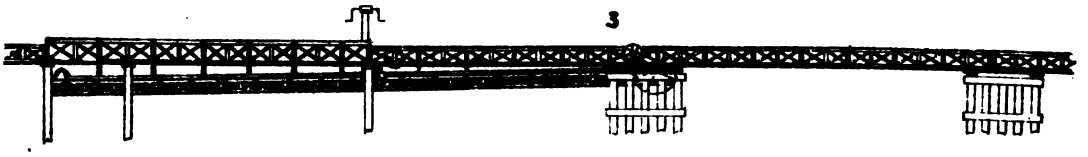

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IRON BRIDGES—(*continued.*)

SUSPENSION BRIDGES—*continued.*

No. 7. Fidler's Design.

Opening Bridges.

BASCULE BRIDGE.

Spans: 30 to 60 feet.

Example; Selby Bridge, over River Ouse, England.

LEAF SWING BRIDGES, COUNTER-BALANCED.

Spans: 26 to 350 feet.

Examples: No. 1, Lane Cove River Bridge, N.S.W.

No. 2, Dundirk, France.

TRAVERSE BRIDGES.

Spans: 28 to 60 feet.

Examples: No. 1, Cook's River Bridge, N.S.W.

No. 2, Lismore Bridge, N.S.W.

No. 3, Leven Viaduct, England.

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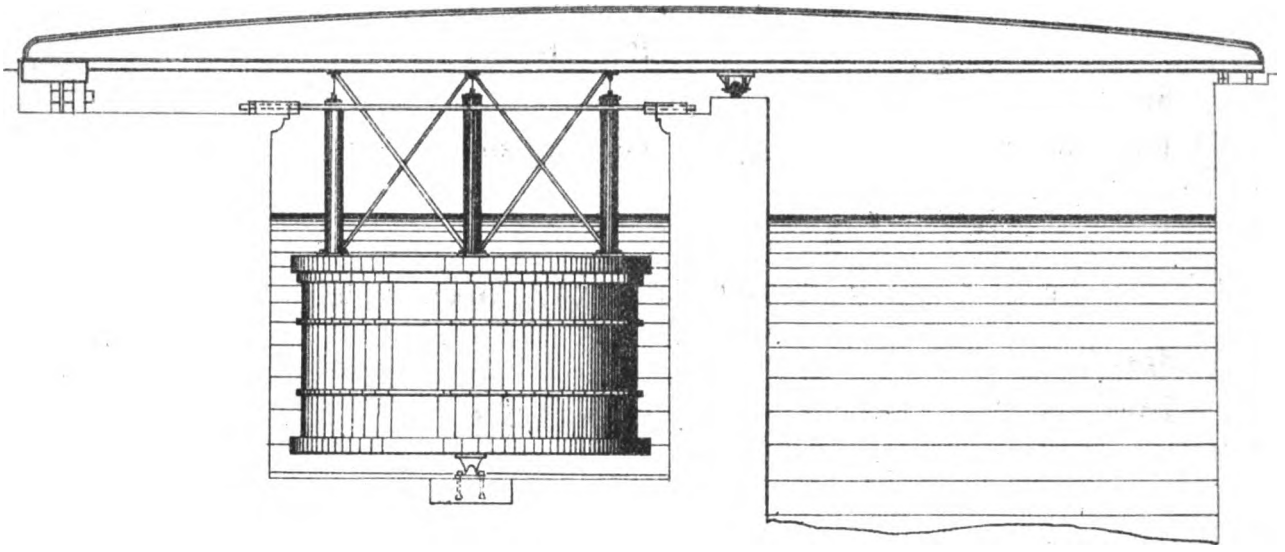
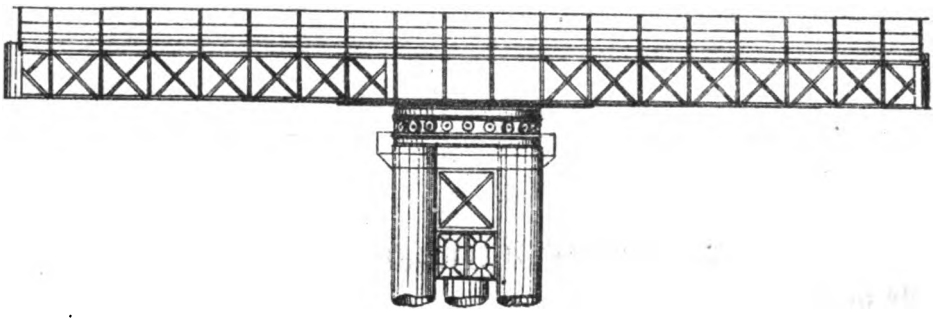
IRON BRIDGES *(continued)*

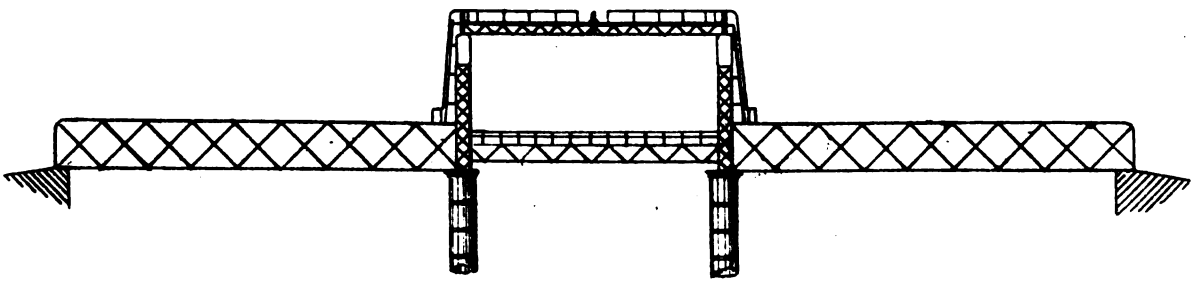
SWING BRIDGE WITH FLOATING CENTRE



ORDINARY SWING BRIDGE



LIFT BRIDGE



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SYDNEY, NEW SOUTH WALES.

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IRON BRIDGES—(*continued.*)

SWING BRIDGE, WITH FLOATING CENTRE.

Spans: 28 feet.

Example: Spencer Dock Bridge, Dublin.

ORDINARY SWING BRIDGE.

Each Span: 40 to 220 feet.

Example: Parramatta River Bridge, Sydney, N.S.W.

LIFT BRIDGE.

Span: Up to 60 feet.

Example: Wilcannia Bridge, N.S.W.

JOHN A. McDONALD,
Engineer for Bridges.

R. R. P. HICKSON,
Commissioner and Engineer-in-Chief
for Roads and Bridges.

December 17th, 1889.

Roads and Bridges Department,
New South Wales.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

IRON BRIDGE AT COWRA.

REPORT.

YOUR Committee, appointed on the 18th February, 1890, to inspect, take evidence, and report upon the proposed iron bridge over the Lachlan, at Cowra, arrived at that town on the 8th March, and on the same day had interviews with the Engineer for Bridges, and also with Mr. Hamand, C.E. At 2 p.m. they visited the present bridge and the site suggested for the proposed new structure. The bridge is of the M'Callum truss type. The superstructure, with the exception of the decking, is in good repair, and appears to have been constructed in a workmanlike manner and of proper material. The piers, which to an amateur would appear ridiculously light, having regard to the superstructure, and which could scarcely have been designed by the same engineer, were in a state of decay positively dangerous. The pier on the right bank, or Cowra side of the river, stated by the Engineer for Bridges and the Road Superintendent of the district to be in a worse condition than the opposite pier, was, on account of a fresh in the river, not available for our examination. The pier on the left bank, the base of which had been exposed to view, under instructions from the Superintendent of Roads of the district, showed that one of the piles was entirely decayed. In other cases the scarfs of the piers were so badly constructed that the Committee were surprised that they should have been passed by the Inspector. The remaining timber also, with few exceptions, was in a state of decay, and the Committee have no hesitation in condemning the piers of the bridge as being entirely unsafe for traffic. In one instance the ravages of the white ants were evident. The approach spans, which were in an exceedingly dangerous condition, have been strengthened by the erection of large trussles, which, in the event of a heavy flood, would in all probability be carried away.

Your Committee proceeded to take evidence at the Court-house, Cowra, at 2 p.m. on the 11th March, and examined six witnesses. Mr. J. V. Bartlett, the Road Superintendent, who had already furnished the General Committee with statistics relative to the traffic on the bridge, said the structure in its present state was absolutely dangerous, and that it might at any time, in the event of a flood, be washed away. He enumerated eleven absolutely rotten piles, and spoke favourably of the site of the proposed new bridge at the foot of Kendal-street, within a very short distance of that of the present bridge. He admitted that 90 per cent. of the heavy traffic to the railway would be cut off if the proposed line from Molong to Parkes and Forbes were constructed, although he contended that even then a new bridge would be necessary, in view of local requirements. He condemned not only the workmanship of the piers of the present bridge but also the plan of construction, as being wholly inadequate to carry the existing superstructure. The Engineer for Bridges, Mr. McDonald, corroborated Mr. Bartlett's statements as to the dangerous condition of the present bridge, and urged the construction of a new bridge from the foot of Kendal-street. Mr. Hamand, C.E., was of opinion that the present bridge had not been designed by an engineer, and said that with the exception of the McCallum truss an ordinary carpenter would be ashamed to acknowledge the work. He proposed to build a

bridge

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bridge of masonry, brick, or concrete, or of the three combined. Although the cost of construction might reach that of an iron structure he urged that a bridge so made would be practically everlasting, and would cost nothing for maintenance. The spans of the bridge, he said, determined in a great measure its cost; for example, a span of 200 feet would cost four times as much to construct as a span of 100 feet. The local evidence consisted principally of that of persons interested in the maintenance of the site of the present bridge. They said that their property would be depreciated if a new bridge were erected on a new site.

Your Committee would strongly recommend the construction of a new bridge at the site selected, having regard to the expense attending the repair and necessary alterations of the present erection. This would involve the outlay of a large amount of money, and would be at the best patch-work—not likely to last more than fifteen years. The Committee do not feel in a position to recommend a design until Mr. Hamand, C.E., has fulfilled the commission entrusted to him by the general Committee.

JAS. E. TONKIN,
Chairman.

March 19th, 1890.

PARLIAMENTARY

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

IRON BRIDGE AT COWRA.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

TUESDAY, 11 *MARCH*, 1890.

[*The Sectional Committee met at the Court-house, Cowra, at 2 p.m.*]

Present:—

JAMES EBENEZER TONKIN, Esq. (Chairman.)

The Hon. George Henry Cox. | William Springthorpe Dowel, Esq.

Charles Alfred Lee, Esq.

The Sectional Committee proceeded to consider the proposed Iron Bridge at Cowra.

John Vigar Bartlett, Esq., sworn and examined:—

1. *Chairman.*] What is your position in the service of the Government? I am Superintendent of Roads and Bridges for this district. J. V. Bartlett, Esq. 11 Mar., 1890.

2. What are your qualifications for that position? I am a surveyor and a road engineer. I have practised since 1862. I was articled from 1858 to 1862 to Mr. Prowse, of Geelong, architect, civil engineer, and surveyor. I was afterwards district road engineer of Corio, and also district road engineer of Colac. I was subsequently shire engineer of Colac. From 1866 I was authorized surveyor for the Colac district. At the end of 1882 I resigned.

3. How long have you been in the service of the New South Wales Government? Since August, 1884. I was first in charge of a portion of the Metropolitan district. Since December 8th, 1884, I have been in charge of the Cowra district.

4. You are well acquainted with the site of the present bridge over the Lachlan at Cowra? I am.

5. Have you at various times made reports to the Department with reference to the condition of that bridge? About ten or eleven times, I think.

6. What was the purport of those reports? First, I was instructed to give the bridge a thorough overhaul superficially, to see if anything was required, with a view to its maintenance in proper order and the prevention of decay. The first report I sent in was as to the condition of the queen trusses on the other side. It was in a most deplorable condition. After sending in that report, when the water admitted of it, I made a thorough inspection of the place as far as I could get down. I reported then that some of the piles were defective, and sent in a sketch pointing out the exact position in which the defects could be found.

7. Have you a copy of that sketch which you could place before us? Yes. Here is my report of July 25. It does not go into the matter quite fully, because at that time I could not get below the walings. The report I sent in then was as follows:—

Sir, Roads Office, Cowra, July 25, 1885.

In conformity with your instructions, I beg to submit sketch of the eastern pier of the Cowra bridge, showing by arrowheads the portions of the two piles that are decayed. The depth of decay is from 6in. to 9in. deep and 2ft. to 4ft. along the piles.

The decking of the bridge will require replacing with new throughout, within two years. Repairs are being effected with old planks cut in two, and the worn parts put outside, but the supply will be exhausted in a few months.

The piers should be replaced within two years, or strengthened, as they have stood about seventeen years, and if you approve of this, provision will have to be made.

I have, &c.,

J. V. BARTLETT,

Roads Superintendent.

The Commissioner and Engineer, Roads and Bridges Department, Sydney.

Subsequently I made an inspection. The caretaker of the bridge got down alongside the piles. He had to get into about 4 feet of water. In the eastern pier on the up stream side four piles are defective under the walings—that is to say worse than above. I found these to be much worse than anything I had previously seen.

8. In what year was that report made? In 1885.

9. At that time how many piles do you suppose were in a defective state? At the time I made my first report two piles only in the eastern pier were, as far as I could see, in that state.

10. Then I take it that since that time you have made several examinations? On the 31st December following I made a more critical examination.

11. What did you discover then? I reported that the planks were being repaired, but that the old planks were of little value having to be frequently renewed. The superstructure of the three large spans was I said in good repair, a few cracks in the upper chord required filling. I gave a sketch showing the position of the several piles which were defective.

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J. V. Bartlett, Esq. 11 Mar., 1890.

12. Can you give us the exact number of piles which were at that time in a defective state. I want to show, if possible, the progressive decay of the bridge—we shall by that means be able to show to some extent the life of the piers? That would depend upon my not missing any defective piles, and at the time to which you refer I could not get below the walings on account of the water.

13. I understand that in 1885 there were only two piles apparently defective—how many more piles were rotten when you sent in your next report? I have not the exact date of it, I have searched everywhere for the document, but cannot find it. I think at the same time I can show you something leading up to it. In my report of December 31st, 1885, I made some notes with regard to the piles commencing on the other side of the abutment Nos. 1, 2, and 3, were sound—that is to say no defects were observed. I refer to the piles of the piers. In the case of No. 5 the piles below the walings was three-quarters decayed. No. 9 was also three-quarters decayed. That is one of the piles on the down stream side—it had been buried in concrete before my arrival here.

14. That concrete was not put there to stop the rotting of the piles, it was put there, I take it, to stop the scour from the bottom? Yes. At No. 11 three piles had vertical stripes from 3 feet to 5 feet long, and these were decayed 2 by 6 inches in depth. At mark A it is hollow. Then at No. 12, 5 piles were decayed, more or less, at the ground line.

15. What date is that? December 31st, 1885. I bring the total up to 11 piles, more or less decayed at the ground line.

16. Are there any more than 11 at the present date? Not visible above the surface.

17. You think that these 11 piles upon which you then reported are the only piles in such a rotten state at the present time? Yes, above ground. I subsequently found that under these piles on the up stream side there were defects far worse than anything else I had seen.

18. What did you discover? I found in various places just a mere shell.

19. You have had a great experience of timber work in culverts and bridges—do you think that *this* timber could have been sound when it was put into the bridge? I should not like to say that it was all in a sound state; in fact I could not say so.

20. Is it not evident that that must have been the case when you see some timber now perfectly sound, and then again a lot of it in a decayed state? From my experience I should assume that the care exhibited in the selection of timber for the superstructure had not been exhibited in the selection of the timber for the piles.

21. Did you ever see a bridge constructed in that form before with the M'Callum truss? No.

22. Do you consider that the piers are sufficiently substantial to carry the superstructure they now bear? Certainly not.

23. They would not be even if the timber had been ever so good? Certainly not. To quote language which I have used before, I should describe it as a sparrow-legged top-heavy concern—those are the words I used, I think, in my original report.

24. You have no hesitation in condemning the plan of the piers of the bridge? In the first place, I should like to say that the design of the superstructure is adapted to American lumber, soft-wood timber, and not to Australian hardwood.

25. Did you notice the workmanship of the piles and scarfs? I noticed it in some instances.

26. Will you give us your idea of it? I do not know how matters were managed in those days, it would take us back seventeen years. All that I can say is that the management and supervision at the present day is very different.

27. Would the supervision of the present day pass such work as that? Not as far as my experience leads me to believe. From what I have seen of the work of the Department, such work would be condemned at the present day.

28. Did you notice an instance where one of the main piles from 12 to 14 inches square had the whole of its upper part scarfed on to about 5½ inches—bearing on to the lower pile? Yes, but I could scarcely dignify the work by the name of scarf.

29. Did you ever see any such work in your life at any other place? No, I never saw a joining of that description.

30. From your knowledge of timber, could you not say that it would have been better to put it on to a 6-inch pile rather than upon half of a 12-inch pile cut that way. Has not the joint as made a tendency to split the pile? There is a great deal of unnecessary strain on the bolts and the bracings.

31. Do you think it is possible at an economical cost to replace these piles, and so utilize the present superstructure? No.

32. You think the timber is too far gone for anything of that sort? Well, you would require a new lock, stock, and barrel to begin with.

33. The superstructure, however, would last for years? The M'Callum trusses, but not the queen trusses.

34. I am speaking of the main truss; is it possible at a reasonable expense to put in new timber piers? No, I should not recommend it. I may mention that an application was made in consequence of the large increase of traffic to have a footway put on the bridge. I prepared an estimate of the cost of the footway together with sections. These were sent down and approved, but owing to the defectiveness of the piers the matter had to stand over. I am of opinion that to take out these piles and to renew the old bridge would be such a costly undertaking that it ought not to be done. Of course you must have regard to the great increase in the traffic, and the narrowness of the bridge. I do not think that for the sake of having a few years of life for the bridge such great expense should be incurred; it would not, in my judgment, be an economical undertaking.

35. Do you think that the gentleman who designed the superstructure of the bridge also designed the piers? It does not look like it; it looks as though two persons had been at work—that is of course only an expression of opinion on my part.

36. Supposing a railway were made from Cowra to Forbes, do you think that if the bridge were made safe, narrow and all as it is, it would be sufficient for the district. You must remember that the whole of the Forbes traffic would be brought down by railway. Under those circumstances would not the bridge be sufficiently large? I do not think so. We have five scheduled roads on that side; over one half of the district is there. Over one half of the local traffic radiates that way and must come over the bridge.

37. Is not the principal traffic over the bridge, at least three-fourths of it, from the valley of the Lachlan towards Forbes and Condobolin? No.

38.

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38. Where does the traffic come from then? The whole of the surrounding district. They have to come over this district from down the Lachlan 20 or 30 miles, and half way between here and Young, and then on to Grenfell. The Forbes traffic is a little more than that of Grenfell. J. V. Bartlett, Esq. 11 Mar., 1890.

39. But the Young traffic would not come here? I mean the local traffic on the road. There are farms on the road and there would not be a railway station opposite every man's door; he would have to take his grain to the nearest market or siding.

40. Do you wish the Committee to understand that a large portion of the traffic would be drays loaded with grain? Not altogether. I am referring to the local traffic to and fro. It is not all grain and wool. We have a growing district which has doubled itself within the last few years.

41. I have a return of a traffic over the bridge showing a daily average of 300 foot passengers; is that all local? Yes.

42. And would the horse waggons and bullock waggons be local? Some of them would be.

43. It is very strange. We have heard that an enormous traffic would be done on a railway from Condobolin and Forbes down the river Lachlan, and now when we are investigating another work we find that all the traffic coming from that direction is purely local? I do not say that it is all local traffic. The principal traffic is from the Lachlan with the exception of three stations. It comes chiefly from the Lachlan and Grenfell..

44. We were told this morning that £85,000 had been taken at the railway station for traffic in, I think, three years and one month; are we to understand that a great portion of that £85,000 is local traffic—that people have paid that freight for things they require themselves. What is the proportion of local traffic? Would it be 25 per cent.? That would be a matter of opinion. I should say as regards tonnage that 10 per cent. would be local, and that the other would go over the bridge.

45. Do you not think, therefore, that if 90 per cent. of the present traffic on the bridge is cut off it would be sufficiently large to accommodate the traffic? That was not my statement. I was referring to tonnage not to traffic.

46. Is not the tonnage in the traffic? Yes; but there is a good deal of traffic besides.

47. Let us get at the passenger traffic—does much of that traffic go to Forbes, Condobolin, and Parkes? Do you wish to include swagsmen, coaches, and buggies?

48. I am speaking of anything that goes over the bridge. Take foot passengers, equestrians, carts, drays, and coaches—what would be the proportion of traffic across that bridge that would be beyond purely local traffic? I could not hazard on opinion on that matter.

49. Give me an approximate estimate—what would be the proportion of local passenger traffic? The coaches go up one day and come back the next—they may average three or four passengers. There is one coach to Grenfell and two to Forbes. I have not taken a note of the coach traffic, but when I have travelled by coach there have been three or four passengers generally. Sometimes there is a crowd; sometimes I have not seen one passenger in a coach—that, of course, does not often happen.

50. But you must have some knowledge of what is local in the shape of passengers in drays, carriages, and buggies. Taking an average, what would be a fair proportion to allow for the local traffic? It would be only a leap in the dark if I were to give you an estimate. You must excuse me when I state that if I had to be bound by what I say it is not fair to ask me to give an answer to a question when I could not arrive at one even approximately. I have taken no notice of the traffic. What I said just now had reference to the tonnage. I have no doubt that about 90 per cent. of the teams coming over the bridge to the railway station would be between Grenfell and Forbes—that I have taken notice of. I have noticed the heavily-laden vehicles because they have cut up the road.

51. Do you think that 50 per cent. of the ordinary traffic would be beyond local influence? I do not like to hazard an opinion—it would be only hazarding an opinion, I could not be stating a matter of fact.

52. Then you will not answer the question? I would, but I cannot answer it.

53. Suppose that 25 per cent. of the traffic now crossing the bridge were discontinued on the construction of the railway, do you think that the superstructure of the bridge would then be sufficient to meet the requirements of the place? We should have to renew the western portion, which is the greater length.

54. If you were to knock off 25 per cent. of the ordinary traffic and 90 per cent. of the heavy traffic, do you think the bridge when repaired would be sufficient to meet the requirements af the place? I did not say that 90 per cent. of the heavy traffic would be discontinued. I spoke of 90 per cent. of the railway tonnage. I have already said that I think there will be a considerable grain traffic over the bridge.

55. Do you believe that if a large percentage of the present traffic over the bridge were taken away by the construction of a railway, the bridge would, when repaired, be sufficient to meet requirements? If the bridge were put in a thorough state of repair there would still be the inconvenience to be considered in connection with its width. It would be necessary to add one footway, at least, on account of the stock crossing the bridge.

56. How many footways are there now? None.

57. How many years has the bridge been in that state? Since 1870.

58. Then it has met the requirements up to the present time? It has not met requirements. At the instance of the Progress Committee, meetings have been held year after year demanding alterations, but they have been put off because we cannot load the piers with any additional weight. My recommendation was that iron cylinders should be put in to strengthen the structure, and I believe it was approved.

59. Suppose a new bridge were to be constructed, would you suggest the present site, or the site at the foot of Kendal-street? Viewed as a national work, and apart from any localisms, there can be no two opinions about the matter. The direct route for the through traffic is at the foot of Kendal-street.

60. *Mr. Dowel.*] Is it a fact that there are a large number of residents on the south side of the river? Yes, there are some residents there. There is also a large quantity of suburban land sold there, and some yet to be sold.

61. Do you know if the residents there have to come to this particular part of the town to transact their business? They have, undoubtedly.

62. In your opinion is it not necessary that there should be always a good and substantial bridge across the river, quite independent of questions arising out of railway construction? Certainly, otherwise the place would be divided, and people would be debarred from getting supplies. Business would be paralyzed if the traffic to and fro were cut off.

63. Have any accidents or losses of stock occurred on the present bridge? Accidents have occurred several times. Whenever bullock teams or horse teams are going across, persons travelling in the opposite direction have to wait until they get off the bridge before they can pass over. 64.

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64. You recommend the erection of a bridge of a more modern type, rather than the repair of the old one? Yes.
65. *Mr. Cox.*] How often in the year was the river impassable by reason of floods or freshes? With the exception of one year it has been frequently flooded. Water comes down from the Fish River in a bank of from 4 to 6 feet without any notice sometimes.
66. Evidence was given before the General Committee in Sydney to the effect that from nine to twelve months in the year the river is fordable, is that the case? There must be some slight misunderstanding, I think. A fresh often comes down when there has been a heavy downpour on the Abercrombie ranges or on the Fish River. It may stop the traffic for a week, but it then gradually subsides.
67. It is not the case then that for nine months of the year the river is passable? During the last twelve months we have sometimes not been able to get across for more than two or three days in a month.
68. Take five years—what would be the average time per year when the river would be crossable? Traffic has often been impracticable at the ford for two or three weeks at a time. Taking it altogether, I suppose heavy traffic there would be stopped for from four to six months in the year.
69. *Chairman.*] Do you consider that the bridge is at present in a dangerous state? It is in a dangerous state.
70. If a flood came down the river what do you think would be the result? If a flood came down I should not be surprised to see the whole affair swept down the river. I have seen two severe floods since I have been here; I have been on the bridge for over thirty hours, snagging. Nearly all the timber strikes the eastern pier. On one occasion I had thirty men there with me. I have seen the water up to within 4 ft. 3 in. of the lower boom. When Mr. Fishburn was erecting a railway bridge, a flood came down and swept away all his staging and his timber bridge. The engineer, to save our bridge, let go the fishplates in several places.

John Alexander M'Donald, Esq., M.I.C.E. and M.I.M.E., Engineer for Bridges, sworn and examined:—

J. A. M'Donald, Esq. 11 Mar., 1890.

71. *Mr. Lee.*] What is your position? Engineer for Bridges in the Roads and Bridges Department.
72. You are conversant with the plan submitted for a bridge across the Lachlan to Cowra? Yes.
73. Do you know No. 2 design? Yes.
74. That design was prepared under your supervision? Yes.
75. During your recent visit to the place you prepared plans. Have you since had occasion to alter or modify those plans? No. I visited the district two or three times before preparing the plans.
76. And you still adhere to your original idea as regards the most suitable bridge to construct at this place? Yes.
77. Since preparing your design have you taken into consideration the life, adaptability, and cost of a stone or a brick pier bridge with a wooden superstructure? That matter was considered before getting out these designs.
78. And you have not considered the matter since? No. I have seen no necessity to open it up again.
79. Have you re-examined the old structure since you arrived in the district? No; I have not had the same opportunity to examine it that I had when I made an examination three years ago in conjunction with Mr. Bartlett, when the river was lower.
80. I believe the Sectional Committee were unable on Saturday to see the worst pier in the bridge, owing to the height of the water? Yes. That is the pier that gets the greatest force of the water in flood.
81. You have already given evidence upon this work before the General Committee? Yes.
82. You are familiar with the estimated cost of the repairs of the bridge? Yes.
83. Have you made any further estimate as to the probable cost of repair? I have made none, except what has been already laid before the Committee.
84. In your estimate-in-chief I notice that you gave an appendix as to the value of the traffic on the Cowra bridge? Yes; £3,000.
85. You were not, in making that estimate, considering that the bridge was going to return anything? No. It was simply made to reduce the detailed table of traffic to something more easy to grasp.
86. The object of the table was to more fully inform the Committee of the actual extent of the traffic? Exactly, so that they could see at a glance what it was.
87. When you gave evidence before the General Committe you said you had men preparing borings on the site of the proposed bridge? Yes.
88. Have those borings been completed? No; detailed borings are being taken right through, so as to ascertain the exact depth at the site of the proposed piers. Previously there were only three bores taken, and on those three bores the depths for the piers were assumed. Before any detailed drawings were got out and before calling for tenders the exact depth would have to be ascertained.
89. Have you now ascertained the exact depth? They are proceeding now.
90. Do you propose to place these cylinders on a rock foundation? Most probably three out of the four will be on rock.
91. Have you had any borings made in the fair way of the stream? Yes; you will see it shown on one of the drawings, it shows a rock bottom.
92. At a depth of 37 feet? It is not 37 feet—it is about 20 feet from the mud.
93. Have you any doubt as to the nature of the bottom? None at all.
94. No bridge could be constructed until you were thoroughly satisfied? No.
95. The Department would not be liable for any expense in the shape of further excavations? None beyond a few feet in sinking the bridge piers. Of course we cannot be certain to a few feet. The rock may not be so solid as the small bore shows it.
96. Now, as to the repairing of the old structure;—do you think it could be repaired in a less expensive manner than has been estimated by the Department? Yes. But it will still be an old bridge. We could repair it with timber piers, but it would be an expensive work, proportionately to putting in a new bridge.
97. Could you not repair the bridge by putting in brick or stone piers? That would be still more expensive.
98. Than iron cylinders? Yes.
99. As a matter of fact it would be an easy matter to repair it, strengthen it, and widen it? Yes; that was the proposal for which an estimate was given of which I spoke in my previous evidence. The proposal

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proposal was to put down iron piers, to put a strong cross girder from one cylinder to the other, to carry the M'Callum trusses on, and then open them out, putting in 20 feet of deck. The piers were supposed to be put in sufficiently strong, so that when the M'Callum trusses required renewal they would carry an iron superstructure and footway.

100. What was the difference between the cost of repairing, and the cost of the proposed new bridge? £12,550 was the estimated cost of the repairs, and £26,538 was the estimated cost of the new bridge. There would be a difference of £14,000.

101. That design provides for a footway on both sides? Yes.

102. And a roadway of 20 feet wide? Yes. If the footways were omitted the cost would be reduced to £23,894.

103. And by omitting the footway and substituting wooden piers for iron piers, the cost would be reduced to £18,178? Yes.

104. Having taken all matters into consideration the Department is of opinion that the bridge now prepared is the most suitable for the purpose? Yes.

105. As to the necessity for this new bridge at all;—have you taken into consideration the fact that it is proposed by the State to extend our railway system to the western country, tapping Forbes? I have not taken that question into consideration. The Department has not gone into that matter. Whatever railway arrangements are made the country must grow, and the necessity for a bridge to connect this side of the river with the other will be permanent.

106. If a railway were taken to Forbes would not a certain proportion of the Lachlan trade be taken to this place? I do not know enough of the country about here to give an opinion.

107. Your Department is strongly impressed, however, with the importance of the district, and is satisfied that the bridge is required? Yes.

108. You have recommended its construction irrespective of existing or prospective railway arrangements? Yes.

109. Do you think the local traffic itself demands an outlay of this kind? It has appeared so from the returns we have had.

110. Has any pressure been brought to bear on your Department? I am not aware of any; it would not come before me.

111. *Mr. Cox.*] If the old timber bridge cost in round figures £9,000, why should this new bridge cost £26,500—the one bridge lasting twenty years and the other only twenty-five years? In the first place, in the new bridge the total width of the roadway and footway combined, will be over double that of the present one—that of itself would almost double the cost. In the second place, the whole chord, right through, and the river piers, will be permanent. The chord of the main spans is supposed to be permanent.

112. If the Department were told that a railway was about to be constructed, and that it would take a great part of the traffic off the bridge, would it not be advisable to reconsider the erection of this expensive bridge, and to see whether one less expensive would not meet the traffic? I do not think that it would lead to any other result. The question has been dealt with in that way previously—that is to say, the Department has considered whether a less expensive bridge would meet requirements. In view of the stock traffic the necessity for a footway has been for a long time apparent.

113. That would cease, however, with the railway to some extent? Then it would become a question of dispensing with the footway only.

114. Your Department has not considered the question of the construction of a railway. You are building a bridge to accommodate all the traffic that now exists? Yes.

115. In the event of the Department being informed that a railway would be made, would it not reconsider the question of the expenditure of this large sum of money? The bridge recommended is to some extent a permanent structure, and therefore the width of the roadway is left large—it will provide for traffic for the next 150 years.

116. The cost per annum to the country will be about £1,735? Yes.

117. Irrespective of maintenance? That includes everything.

118. The bridge is supposed to last only for twenty-five years? The table to which you refer institutes a comparison between permanent, semi-permanent, and temporary structures, instead of comparing them on the prime cost only.

119. It is proposed to build a new bridge on another site? Yes.

120. You are aware of the flood level? Yes.

121. The flood has come up to the floor of the present structure? Above the floor.

122. What provision have you made for that in the new structure? The new structure will be clear of the highest flood known.

123. And to get up to a bridge on the new site you would have a considerable embankment? Yes.

124. Would that interfere with private property in any way? If we keep the embankment close up to some of the properties we should cut them off. If the owners objected to that we could leave a space between the embankment and the present buildings.

125. *Mr. Dowel.*] Do you think the site of the present bridge is the best that can be obtained? No; I do not.

126. You consider that there is a better site where you are making borings at the present time? Certainly.

127. The best that can be selected? Yes.

128. After a careful examination of the banks of the river? Yes.

129. In 1888 you reported on the old bridge? Yes; about then.

130. You reported then that the main spans were sound. Are you of that opinion now? That the M'Callum trusses are sound and serviceable—Yes.

131. When you said that the main spans were sound and serviceable, did you point out that only the main piers carrying those spans were defective? As far as I can remember I reported pretty fully on the question of the piers. If I did not do so in writing I did so verbally to the Commissioner.

132. Having seen the bridge, and having to a certain extent inspected it, are you of opinion that these main spans are sound and serviceable? The M'Callum trusses—yes. There has been two years further wear on the deck.

133. In your opinion, is the old bridge sufficiently wide? No.

134. When do you anticipate that the borings will be completed? In about six weeks.

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135. No. 3 carries out, does it not, the principal dimensions of No. 2 as regards lengths and widths? The full length of the bridge is almost exactly the same in each design.
136. And the width? And the width also.
137. In your opinion, is No. 3 design sufficient to carry all the traffic which exists at the present time? For the road traffic—yes. There is the same width of decking and everything as in the other two designs, but for the flood-waters it is risky.
138. You propose in both your designs to have iron cylinders? Yes. But I have given in the appendix an estimate of the cost if timber piers are adopted.
139. What would be the cheapest price for which No. 3 could be constructed? The cheapest with timber, and without footways, would be £16,000.
140. In your opinion, would that carry all the existing traffic with perfect safety? It would carry the traffic with perfect safety, providing it receives no damage from a heavy flood. At the end of its life there would be almost a complete stoppage of traffic for renewal.
141. Have you not, in your design No. 3, materially improved structures for the piers? Yes; they are very different.
142. Do you not consider them sufficiently sound and substantial to stand any amount of flood-waters? Not in the main river, if a lot of timber were to come down.
143. Then you claim considerable advantage for the iron cylinders? No, the longer spans.
144. What is the width of the principal span of the existing bridge? 130 feet.
145. What is the width of the principal span in No. 3 design? 90 feet.
146. And your composite span? 160 feet.
147. Both piers, then, would be out of the present river course? No; in No. 3 design the iron pier on the right hand side is almost in the fairway of the river.
148. But both piers would be placed well on the river bank? Yes.
149. And that is some considerable advantage? Considerable.
150. Are you aware that there is much timber coming down the river? I cannot speak from personal knowledge, but I understand from Mr. Bartlett that a considerable amount comes down in a flood.
151. I understood you to say to Mr. Lee just now, that you were not in favour of the construction of brick or stone piers in substitution for iron cylinders? No, on the score of cost.
152. Under other circumstances, would you approve of that? We do put them in in some places where we find that it can be done economically.
153. Would it be possible to construct a bridge over this river entirely of brick and masonry, doing away with timber altogether? It would not be impossible.
154. Would there be a great deal of difference in the cost? A great deal; I have made no estimate.
155. Yet you are prepared to say that there would be a large difference in cost? I am.
156. If a brick or stone structure were erected, would not the cost of maintenance be much less than the cost in the case of an iron or timber bridge? It would be much less than in the case of a timber bridge, but not very different from that of an iron bridge. An iron bridge requires very little maintenance, and the increased life sometimes assumed for stone, means a very small item in reducing the value of the sinking fund.
157. Is not your timber decking in the iron and composite bridges a considerable charge on renewals? I was speaking of an iron bridge, then I was referring to the bridge in the list in the appendix at about £70,000—that has an iron deck and a tarred metal roadway.
158. But is not the renewal of timber-decking a heavy item? Yes.
159. You estimate an iron bridge to cost £70,000? Yes.
160. Do you not think that a bridge could be constructed of masonry or brick-work for about that amount, or something less? At this site—no.
161. Knowing what you do about this place and the particular site at which you propose to erect the bridge, do you not think that all interests would be served by the erection of your No. 3 design, more especially as it has been pointed out to you that there is a probability of a railway being constructed from Cowra to Forbes, which would materially relieve traffic on the bridge? The question of traffic is provided for in both bridges. I think that one ought to look forward a little beyond the present day. Take No. 3 design—in twenty-five years, when it has to be renewed, it would be an enormous inconvenience to Cowra to have to stop the traffic completely for twelve months.
162. Do you propose to stop the traffic in the construction of the new bridge? It will be on a different site
163. Have you not known instances where timber structures if erected properly of good sound timber, and under good supervision have lasted longer than twenty-five years? They do in some cases, but the average is about twenty-five years.
164. Under all the circumstances you do not recommend the construction of No. 3 design? Most strongly—no.
165. You do not recommend the construction of a brick or masonry bridge? No.
166. The only objection you have to that is on the score of cost? That is all.
167. Setting aside your No. 1, 2, and 3 designs, and the masonry, and brick bridge, would it not be desirable and possible to erect a suspension bridge which would answer all purposes? It is not a suitable site for a suspension bridge. The foundation on the west side would make the fixing of the cables very expensive.
168. Have you made any estimate of the cost of suspension bridges? I have not. I do not think them suitable for heavy traffic. They are being done away with in other parts of the world for that very reason.
169. Do you know of any suspension bridges over the Thames? I know them all.
170. Does not very heavy traffic pass over some of those bridges? Yes, and they have had to strengthen them up on account of the heavy traffic within the last few years.
171. Is it not a fact that other suspension bridges are being erected in England at the present time, and was not one recently erected at Battersea? The Battersea bridge has been erected for many years.
172. But was not a bridge recently erected there? Not that I know of.
173. Do you still hold the opinion that suspension bridges will not carry heavy traffic? They can be made to do so at great cost.

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174. Would they not be more desirable structures to erect over rivers liable to floods than bridges with a large number of piers? In some special sites they are suitable.
175. On a site like this for instance? I do not think so.
176. You prefer in your designs a large number of piers to a very few? As a matter of cost, yes. The longer the spans at this site the greater the cost would be.
177. Could you furnish the Committee with an estimate of the cost of a suspension bridge suitable for the traffic here? It would take some little time to prepare it, but I could do so if you wish.
178. *Chairman.*] You consider the present bridge as it stands as highly dangerous? I do.
179. And that it is liable at any moment to collapse? Yes.
180. Did I understand you to say that in the case of a composite bridge the cost, on account of interest on capital invested and maintenance, would amount to £1,735 a year? Yes.
181. And that the life of the timber portion of the bridge would be twenty-five years? Yes.
182. That would amount in twenty-five years to £43,375? Yes.
183. Added to the original cost, £26,500, it would make the actual cost of the bridge at the end of twenty-five years £69,875? No. The total cost would be £43,375. There is a sinking fund. In comparing the lives of these bridges the sinking fund provides for the cost being paid off by the end of its life—that is what I have shown in the appendix.

Arthur Samuel Hamand, Esq., sworn and examined:—

A. S. Hamand, Esq. 11 Mar., 1890.

184. *Mr. Cox.*] You are a civil engineer? Yes.
185. You have heard the evidence just given as to this bridge? I have.
186. Do you endorse the statements made as to the present structure being unsafe? I should decline to be responsible for the safety of the existing bridge.
187. Do you think that the bridge in its original state was a properly-constructed bridge for the purpose? I do not think that it was designed by an engineer at all. I think the main truss, called the M'Callum truss, is a *fac simile* copy of a single track railway bridge very much used in the United States, and called there the Pratt truss. For the rest of the bridge I do not think a good carpenter would own it—certainly not an engineer.
188. Do you think the timber used can have been good and sound timber originally? I am told that the chief trusses, the 130 feet spans, are constructed out of timber carefully selected and stored for two years in order that it might be matured. The rest of the bridge is constructed out of sap timber cut down hurriedly.
189. Some of the piles you observe on the other side could hardly have been sound timber when erected, or they would not have been in such a rotten state in twenty-five years? I think not.
190. The fact that some of the piles are still sound would seem to show that other piles must have been of inferior timber? In choosing timber it is difficult to determine what will last and what will not without knowing something of the growth of the timber itself. Anyone coming into the district without knowing anything of the growth of the timber there would very likely make a mistake.
191. In building a bridge for the future requirements of Cowra, considering that sooner or later a railway will be constructed, so relieving the present heavy traffic on the bridge, to what extent do you think the country would be justified in spending so much money—in other words what is the cheapest bridge that could be built in order to meet the present requirements? I think the district is entitled to a bridge that will carry two lines of traffic—one in either direction. I think it ought to have, also, one footway, at least, that is if it is constructed on girders as a timber bridge.
192. What would be the material employed in such a bridge? I should endeavour to build a bridge of masonry, brick, or concrete, or perhaps the three combined.
193. And a bridge such as you describe would meet the requirements of traffic, and could be erected for how much? That is a very large question. I would point out first that the three designs at your back are designs which contain very different spans. The relative cost of bridges is determined more by their respective length of spans than by any other consideration. It is almost impossible to compare these three bridges because the spans are so different. There is one with a 90 feet span, another with a 160 feet span, and then there is an iron bridge with a span 216 feet and no small spans. The cost of a span varies nearly as its square, that is a 200 feet span, so far as the main girders are concerned, will cost nearly four times as much as a 100 feet span. I am a little surprised at a 90 feet span bridge being put before you at all. They are evidently not big enough, having regard to the floods.
194. Especially having regard to the fact that one flood came over the decking of the bridge? I understood that one flood came up 4 feet over the bottom of the bridge. I doubt whether we will have so tremendous a flood again.
195. Could you, off-hand, say what a bridge of the three materials you have just mentioned would be likely to cost, knowing the spans required? I could not say without preparing plans, and making an estimate in the usual way. Upon general principles, everything else being the same, you ought to be able to build a bridge of masonry, brick, or concrete, or the three together, for at least as little as an iron bridge, and probably less.
196. What advantage would it be to build a bridge of brick, masonry, or concrete if it cost the same as an iron bridge; would its life be longer? Its life is practically for ever, and it does not cost 6d. for repairs.
197. In the case of either of the bridges now under consideration the annual cost of depreciation amounts to a large sum? Yes.
198. Of course the bridge will cost the country nothing to maintain, but if a wooden bridge after twenty-five years costs £43,000 we should be quite justified in building a stone bridge at a cost somewhat over that amount, provided the sum were reasonable? Yes. In building a stone bridge you do not put quite so much weight in your foundations as you do with iron cylinders. The consequence is that it might not be absolutely necessary to go down to the solid ground. By spreading the base over a large area, and distributing the weight upon each square foot of the base, it is not always necessary to go down to the rock. I have no doubt you all know that not a single bridge in London is built on rock—they are built on clay.
199. I suppose there is no rock? No.

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A. S. Hamand, Esq. 11 Mar., 1890.

200. I do not know whether you will be asked to prepare any estimate of the bridge, but we should be guided a good deal by what you say, having regard particularly to the information you have now obtained as to the probability of a large traffic being removed from this bridge, and our requiring a bridge to meet common local requirements? I think Cowra is destined to grow, and to grow very rapidly, to become an important centre, and if you do get a line of railway from Forbes I think it will only tend to increase the rapidity of the town's growth.

201. Is not that the reverse of what has happened in many country towns when the railway has gone beyond them? Yes, it is so in some cases.

202. But you think that in a district with material wealth in its immediate surroundings that is not likely to be the case? No.

203. *Mr. Dowel.*] Have you made any examination of the stone in this locality? I have not finished my investigation upon those points, and I would rather not be asked any questions upon them because I could not give complete information.

204. Have you made any observations as regards the quality of bricks? I have looked at some of them.

205. Can they be made at Cowra suitable for the construction of a bridge? I think so.

206. Have you any experience of the construction of iron bridges? It extends over thirty years.

207. In forming a specification is it absolutely necessary to take channel iron bracings at $5\frac{1}{4}$ inches by $2\frac{3}{8}$ inches by 5-16ths? I have no doubt it is when specified.

208. Would not a piece of iron 5 inches by 2 inches answer all the purposes required—would it not be a more marketable size than that specified;—is not the size specified one which would have to be specially rolled for this particular purpose? I think $5\frac{1}{4}$ inches is a little extraordinary in size. I do not think it will be kept in stock by most manufacturers. I think the size would be 6 inches. Certain manufacturers might always keep it in stock, but I do not think it would be generally kept in stock. They might have it in their lists, but it would not be kept in stock, I think.

209. Then I will take wrought-iron rolled girders 27 inches by $7\frac{1}{8}$ inches—is the $\frac{1}{8}$ put in for any special reason? I can only imagine that it is put in to secure the next inch below it being a full inch.

210. Is it the custom, so far as your experience goes, to specify these peculiar sizes of iron in the construction of iron bridges? We generally put in the size that happens to be in the trade list. I have had manufacturers come to me and say, "I have none of that particular iron in stock, will you alter the dimensions?" I have altered the dimensions accordingly.

211. I am referring more particularly to the $1\frac{1}{8}$th and 5-16ths? When it comes to thickness it is a different matter, of course.

212. But taking the iron-work to which I have referred is the $\frac{1}{8}$th and 5-16ths necessary? That depends upon the particular section.

213. Would not a specification of certain sizes other than these peculiar ones have a tendency to cheapen the cost of the bridge? I think I ought to explain that there are certain manufacturers who occasionally do supply an extra 1-16th or an extra $\frac{1}{8}$th. They tell you that they are prepared to do so. Sometimes the rolls are a little bit worn and they turn them down to get the requisite dimensions. For ordinary purposes it is best to keep to more simple figures.

214. In preparing designs is it a very difficult thing to make calculations and proper strain sheets for certain spans? I should think an ordinary draughtsman ought to do it very quickly.

215. Take the No. 1 design for instance? Well, I should not like him to be much more than a week about it.

216. Then if the chief of the Department said it took two months, you would consider that a considerable time? That would refer to every detail, not to the main girders alone.

217. Would it not be an economy if the Department were to adopt a certain type of bridge and to have tables prepared—is it not practicable? I think in many cases it would be practicable. For instance, I do not know that a 216 feet span is necessary, I suppose it might as well be 200.

218. Suppose you started with a 500 feet span and came down to a 30 feet span, could not a table be prepared showing at a glance the calculations and strains for the various spans? If the weight you were going to carry per superficial foot were identical in all cases, and the width of the bridge would be identical it might be useful.

219. Do you recommend the adoption of any type? If I were designing bridges, and had one with 100 feet span to design I would endeavour to make any designs that followed, whether a 90 feet or 110 feet agree—that is I would endeavour to alter the spans to 100 feet—that would save me the trouble of getting out the design for a 90 feet or a 110 feet span.

220. Do you know that it is the practice to call for tenders for iron bridges in England? I do.

221. Are you aware that in nearly all cases tenders are accepted in England for the iron-work? I suppose it would be so in all cases.

222. Would the cost be cheapened if some modification were made in the specifications in regard to the sizes of iron I have been asking you about—would the matter be simplified? If you were to show me a whole girder bristling with these odd dimensions, I have no doubt an alteration could then be made which would reduce the cost.

223. Supposing I were to show you a whole bridge, would not that be more to the purpose? I think if you could I should tell you that it ought to be altered.

224. I take it that you have examined the plans now under consideration by the Committee? I have seen them on the walls to-day for the first time.

225. You are not prepared to give the Committee an opinion as to their suitability? Not having had any opportunity to examine the designs I am unable to give you an opinion.

226. What is the nature of the information you desire now to give to the Committee? I was requested by the General Committee to prepare the design of a bridge of brick, stone, or masonry—that I am about to do. Knowing that the Sectional Committee were sitting here, I thought that they might like to put some questions to me.

227. You have no special information you wish to give us? None at present.

228. Now as to the construction of suspension bridges—are you aware that they are considerably used in other parts of the world? Yes. They are much used on the Continent and still more in America.

229. Do they carry heavy traffic? They carry railway trains. It is simply a question of stiffening the girders.

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230. If it were not a matter of such excessive cost might it not be desirable to span the Lachlan with this description of bridge, in view of the timber coming down in flood-time? If I could build a suspension-bridge for the sum of money some of the designs are to cost I should prefer the suspension-bridge, because it affords more freeway for the water. A. S. Hafnand, Esq. 11 Mar., 1890.

231. Do you see any particular difficulty in the way of the construction of a suspension bridge, having regard to the banks of the river? No difficulty whatever.

232. Have you made any comparative estimate of the cost of a suspension-bridge and a brick bridge? I have not done that yet. I had already considered the question of a suspension-bridge before you mentioned it. I know of so many places where they are usefully employed that I thought it just possible one might come in here.

233. As an engineer, do you not think that the construction of light suspension-bridges across our rivers generally would be a material gain? Wherever the banks are deep, or wherever the depth of rock for a foundation for the cylinders is great, wherever the length of pier is tremendous, a suspension-bridge would come in cheaply.

234. You have seen the banks of this river—do you think there should be any great difficulty in putting down foundations of timber pile-driving for the purpose of carrying stone piers or iron cylinders? Pile-driving and timber work are more suitable for places where the foundations are swampy, or where perhaps the clay is soft, or where there is a quicksand or something of the kind—then you may rely on the friction of the piles partly to sustain your base. There is no difficulty in making a foundation in a place like this.

235. Can you give the Committee any instance where stone piers are erected on iron cylinders? I suppose the Hawkesbury bridge is erected on those foundations. There are numerous instances. The Royal Albert bridge, at Saltash, was put down on similar foundations.

236. So that if local stone is to be obtained here it will not be undesirable or impossible to construct stone piers on foundations of iron cylinders? No; it will not be impossible at all.

237. There would be no engineering difficulties? No. It is a question of relative cost.

238. I take your evidence to show that it is necessary that a new bridge should be constructed at Cowra? I think so.

239. And that the construction of that bridge should be carried out in brick, stone, or cement, or concrete? I should say this, that I am influenced to some extent in my judgment from the fact that the existing bridge stands at a considerable angle with the flow of the water, and that the pier on the Cowra side of the river is almost immediately in the centre of the current. It is a kind of trap to catch anything that might come floating down the river. On that ground it is dangerous. That, and the width of the bridge, made me come to the conclusion that you ought not to try and patch up that bridge, and that the new one ought not to be erected on that site.

240. Do you think that the site selected by the Government is a desirable one for the new bridge? I think it is better than the old one; but I should still bring the bridge further south—almost in a direct line to the angle of the two streets—let us say, the angle opposite Murray's store. I should like to bring the centre line of the bridge exactly at right angles with the flow of the stream, down the piece of straight there is in the river. The river, at that point, is fringed by rows of trees, and those trees would have the effect of training anything that came down the river, into a straight line projected from them.

241. What is the custom adopted in other countries for testing the iron and steel used in bridges—is the cost of a test paid by the contractors, by the parties employing them, or how is it paid? Generally by the contractor. He is bound to provide just as many tests as the engineer thinks necessary.

242. You think it is desirable that the custom should prevail of allowing the testing of the iron and steel to be made by parties in the employ of the contractor? Not by parties in the employ of the contractor—certainly not. The usual course is this: Assuming that you wish a particular piece of iron tested, you say to the contractor, "test this specimen for me—put on such and such a strain." The contractor provides the assistance, the labour, the iron and all the surroundings for you to see it done. That does not make you in the employment of the contractor.

243. That would be quite as far as you would go? It is; and I think it is as far as anybody would go.

244. *Mr. Lee.*] Is not the object of your mission here at the present time, to collect information to enable you to prepare plans, and submit specifications with an estimate of the cost of a bridge of either brick, masonry, or concrete? Yes.

245. And up to the present time you have not completely supplied yourself with that information? No.

246. When you have finished and prepared your estimates and plans, they will be submitted to the General Committee? That is so.

247. Will you require any soundings or borings to be made in the river? I think not. I think I know sufficient from what I have seen.

248. *Chairman.*] Have you ever seen any of these brick or masonry structures—that is, arched bridges—in a country where floods are so strong as they are in this country? I think the river Po, in Italy, rises as much as this river—in fact rather more. It drains 500 miles frontage of the Alps; it has a fall of only 2 inches a mile for the last 100 miles of its length. Nearly all the bridges there are of brick or stone.

249. Arched bridges? Yes.

250. What would be the result if a flood came up above the arch of one of these bridges—would it affect the structure? I do not think so, if it were properly built. It might obstruct the water a little; but there would not be the slightest fear of its being carried away.

251. There is a great deal more resistance in a brick and stone bridge than in an iron or wooden bridge? Not only that, but there is a greater dead weight to move.

Mr. Robert Daly, innkeeper, sworn and examined:—

252. *Chairman.*] What are you? I am an innkeeper at this end of the present bridge. Mr. R. Daly. 11 Mar., 1890.

253. How long have you been there? Over thirty years.

254. I suppose the evidence you wish to give would be in favour of the bridge remaining where it now is? I have an objection to any change, of course, in the site of the bridge, on account partly of its effect upon my trade.

255. Do you think that the site of the present bridge facing, as it does, a narrow street, and being out of the line of the main traffic, is as good as the proposed site at the end of Kendal-street? Of course it is not, at the present juncture, but there are some buildings which could be pulled down. I remember that

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Mr. R. Daly. 11 Mar., 1890. in 1862 and 1863, when I was one of the chief agitators for a bridge over the Lachlan, the floods were far more usual than they are now. A gentleman came up from Sydney and made an estimate for a bridge somewhere near where it is proposed to erect one now. He made an estimate of £26,000. Some diggings were breaking out at the time, and we had to shift everything by boat. We had three boats carrying goods across the river. The next man who came up made the estimate £16,000 or £20,000, taking the bridge two chains lower down the river. The next man who came up was Mr. Meldrum. He pointed out that where the bridge is now it was two chains narrower to span over the river than at the other points. He brought the estimate down to £10,000 or £12,000, and the first contract was £9,000.

256. We want to know why you object to the bridge being shifted? I object to it because it will be the ruin of me; it will drive all trade away from my place. Then I want to show that by putting the bridge where it is now on this side of the river there will be an advantage so far as the putting in of piles is concerned. I remember that when the piles were put in before they dug a trench, and when the flood came down two months afterwards it washed all the material out. The bridge, however, remained firm, and the trench was filled up with concrete. The alteration of the site of the bridge would injure several others besides myself.

257. You consider that if this bridge is shifted to the end of Kendal-street it will materially affect your business? Of course.

258. Are there any other business people in that street who will be affected by the alteration? Yes, several.

259. And you wish to enter your protest against the site being shifted? Yes, and if they wish to pull down any building of mine, I shall be quite willing to accept any value which may be placed upon it by arbitration.

Mr. Henry Dennis, innkeeper, sworn and examined:—

Mr. H. Dennis. 11 Mar., 1890. 260. *Mr. Cox.*] You are an hotelkeeper at Cowra? Yes.

261. You have heard the evidence just given as to the new bridge to be erected over the river? Yes.

262. You have heard that it is proposed to start from Kendal-street, instead of from where the old bridge stands in Bridge-street? Yes.

263. Do you approve of the site of the new bridge? No, I do not.

264. What objection have you to it? Well, in the first place, as Mr. Daly has already stated, it will generally reduce the value of my property; in the second place, the expense of the bridge would be increased because the spans would be longer and the approaches greater. I see that an official states that there are two curves in Bridge-street, but neither of them are greater than the one curve in Kendal-street.

265. In the event of the old site being chosen for the erection of a new bridge you would have no bridge for twelve months? I have been fourteen years a resident of Cowra, and it is not often that the flood-waters of the Lachlan have stopped all traffic. They might stop it for team traffic, but not for ordinary traffic.

266. How often in the course of the year is a bridge necessary over the river? For heavy traffic it is always necessary.

267. How did you get on before a bridge was built? I cannot say, I was not a resident here then.

268. In the event of a railway being taken to Forbes from here would not all the heavy traffic be stopped? In the event of that line being made it would, of course, take all the heavy wool traffic off any bridge in existence.

269. Then do you think there is any occasion for a bridge at all? I understand that in view of the state of the present bridge it is necessary that a new bridge should be made, or that the old one should be repaired, so as to render the traffic safe. Some bridge is necessary in any case.

270. You think your property would depreciate in value if the site of the bridge were removed? I do not think it would be any great benefit to the travelling public to have the bridge shifted from its present site. Of course, if it were shifted, the value of my property would be depreciated.

271. You would prefer to have the other bridge repaired then? Yes, according to the evidence of the engineers, if cylinders were put under it, and it were widened, there would be a saving to the State of some £15,000, and the bridge would meet all requirements for many a day. I believe it has been stated that there would be a saving of from £18,000 to £20,000 if the old structure were repaired, and having regard to the necessity for retrenchment in our public works expenditure, I think that is a great consideration.

272. Have you anything further to state? Well, it is a well-known fact that if the bridge were taken from Kendal-street across the approach would be up to the roof of Murray's frontage.

273. Would not that embankment tend to save the property from being flooded in time of flood? Yes. But when the embankment is made, the property will be as it were inside a wall. If we get a railway from here to Forbes I unhesitatingly state that all the local traffic could be carried over the repaired bridge. The heaviest local teams that will come over it will not be from more than 3 or 4 tons. The 9 or 10 ton wool teams will cease, because the wool will come by rail.

274. *Mr. Dowel.*] Do you anticipate any increase of traffic from the southern side? Yes.

275. And do you think the present structure will accommodate the increased traffic? Not in its present state.

276. Is the present bridge wide enough? No.

277. Have you known accidents or loss of stock to occur on that bridge? Yes, from the narrowness of it. You have to be careful to allow two buggies to pass one another, and it is not safe to drive alongside a team when it is coming over, indeed it is positively dangerous. The loss of the stock on the bridge has been very little, but it is unquestionably too narrow.

Mr. Dennis Cornelius Joseph Donnelly, storekeeper, sworn and examined:—

Mr. D. C. J. Donnelly. 11 Mar., 1890. 278. *Mr. Dowel.*] You are a resident of Cowra, engaged in business as a storekeeper? Yes.

279. You have resided here for some time? Yes; I remember the river before the bridge was built over it.

280. You know the position of the present bridge, and the proposed site of the new one? Yes.

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Mr. D. C. J. Donnelly. 11 Mar., 1890.

281. In your opinion which is the more desirable position for a bridge? The new site would be of more service to the public generally. There are some vested interests in Bridge-street. I should not care to interfere with those interests, but common-sense would suggest that a straighter course than the present would be better. I shall be quite willing to take the bridge round by Bridge-street if it could be done profitably to the country.

282. In the interests of the general community, which proposal do you favour—that to construct a a bridge on the new site or that to repair the bridge on the existing site? The new site would be shorter for the travelling public, although for my part, I do not object to going round the other way.

283. In your opinion is the present structure a suitable one for the requirements of the district? It is not; I have no hesitation in saying it is not. It is in no way fit for the present traffic.

284. Do you anticipate any increase of settlement and traffic on the south side of the river as time goes on? Yes. I think that in building a bridge we should remember that we are building for the future. When I came here twelve years ago there was not one-sixth of the population that is here to-day. If we continue to increase at the same rate this place will be six times as big as it is now in twelve years time. I have heard it stated to-day that in the event of a railway being taken from here to Forbes a great amount of the heavy traffic would be taken off this bridge. Now I say that that is not the case, and it never will be the case. Of course it will take some, but the bridge is a means of communication cementing Cowra with Burrowa on the extreme left. Then there is Marengo, Koorawatha, and the whole of the country between here and Grenfell. Not only that, but there is a large tract in the Bland country. At the present time there is traffic going in that direction. Then there is all the trade between here and Goolagong 30 miles down the river—that the railway will not touch at all. All that traffic must come in here across the bridge unless we have a railway from every point of the compass, and that is not at all probable. The railway must to some extent relieve the traffic on the bridge, but the relief so given will in a short time be more than compensated for by the produce of the increased acreage under crop. A great deal of land on the other side is under cultivation. There is the whole of Morongolo under cultivation; then there is Back Creek, and the slopes of Broula Range, and Neila Creek and its tributaries. There is no other way for all these people to come here with their produce except by the bridge. I am quite sure in my own mind that the traffic cut off by the railway will be superseded by the new traffic caused by the very railway itself.

285. *Mr. Lee.*] From the tenor of your evidence, I gather that, you are perfectly satisfied that the traffic is of such a nature that a serviceable bridge is demanded? Yes.

286. Do you consider the present structure sufficient for the purpose? I do not.

287. What is your opinion as regards the repair of the present structure, and the erection of a new one? I think the erection of a new one would be the better course. I think the repair of the present structure and the keeping of it in repair afterwards would be as expensive as a new bridge. Then the narrowness of the existing bridge is dangerous to life and limb. Two months ago a daughter of mine almost lost her life on the bridge. I have had to rush in front of horses to save my own children on the bridge. Even when people drive carefully, with skittish horses it is dangerous to be on the bridge. When you meet cattle on the bridge there is invariably danger and confusion.

288. You think that the new bridge should be on the new site? Precisely.

289. As a townsman of long residence do you know of any valid reasons against the new site selected? I know of nothing but the vested interests in Bridge-street.

290. But apart from those? I am not aware of anything.

291. You have heard previous witnesses refer to the approach on this side, I suppose you are aware that it will commence flush with Kendal-street, and graduate up to the floor of the bridge? Yes; I think the wall of which I have heard the witnesses speak would be more a protection than otherwise.

292. If the present bridge is as much used as you say it is for heavy teams and for sheep and cattle, must it not be extremely inconvenient at times to bring the traffic through that narrow street round into Lachlan-street? I have experienced some little inconvenience myself in coming round that corner.

293. I was speaking more particularly of lots of sheep and cattle and long teams having to come along that narrow street? I should imagine it would be rather inconvenient.

294. Would it not be a greater convenience to all parties concerned to have a better get-away in Kendal-street. Would not that be better than the traffic crossing the bridge, coming upon the ordinary traffic suddenly? Common sense suggests one answer, and it is—yes. At the same time if it were possible to so arrange matters that the bridge could be erected without doing injury to the property to which I have referred, I should like to see it done.

295. But how is it possible to have the new structure in Bridge-street, and at the same time to give a proper approach to it? I can see the difficulty very well. I have often been on the present structure in flood time helping to get logs away from the bridge with grappling irons, but if the river were in flood again, as I have seen it in the past, I should think twice before I went upon the bridge to do what I did there before. I think there would be some difficulty in getting volunteers to go upon that bridge to clear logs after the investigations which have been made within the past few days.

[Ten plans].

Sydney: Charles Potter, Government Printer.—1890.

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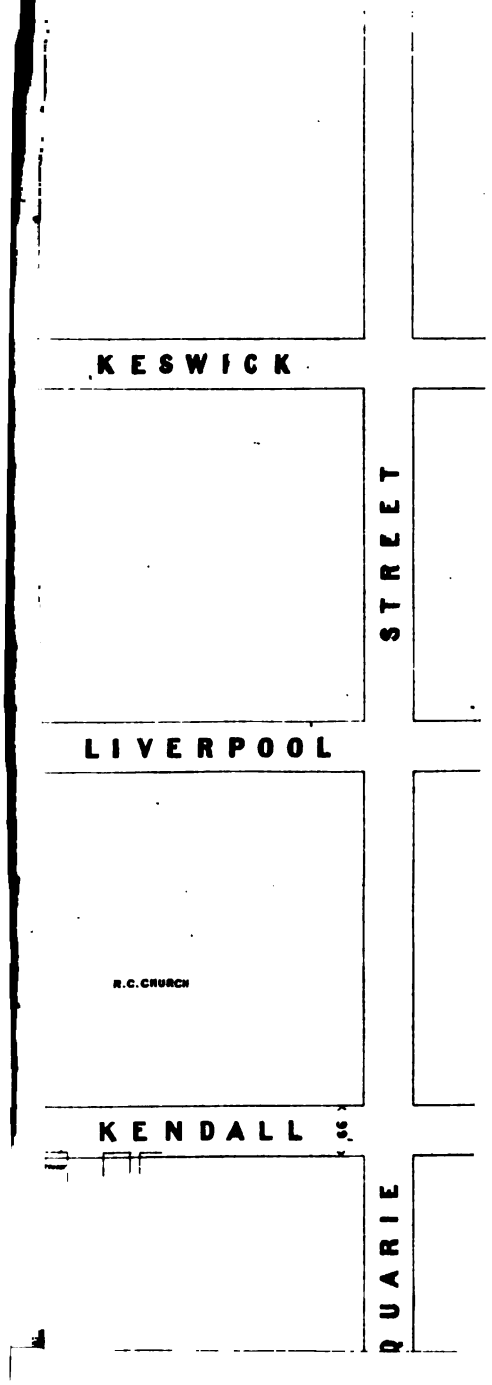

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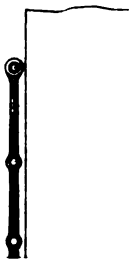

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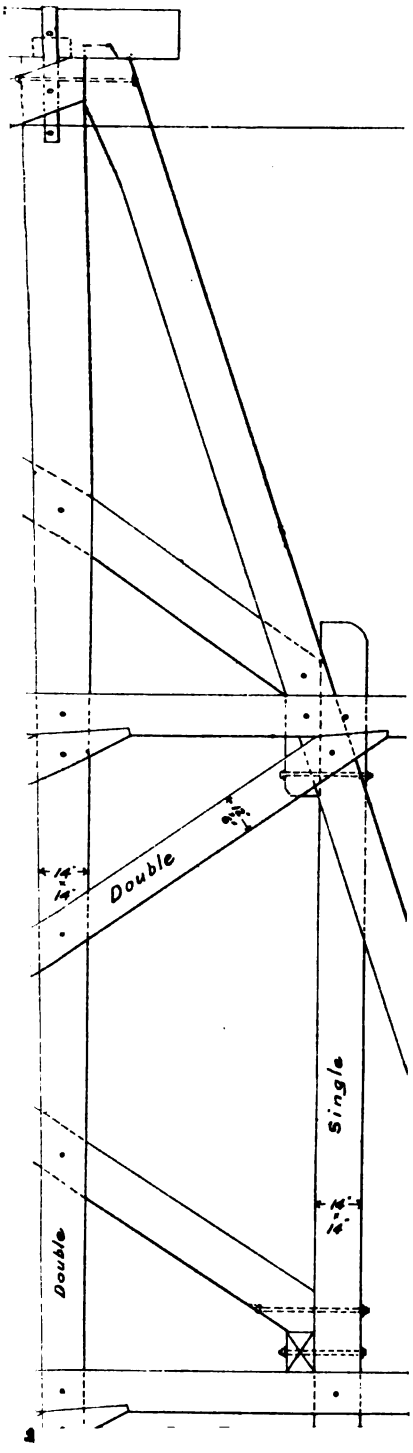

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No. 8

Commissioner and Engineer in Chief
for Roads and Bridges
M.S.90

DESIGN	IRON BRIDGE WITHOUT FOOTWAYS AND 2	TIMBER BRIDGE WITHOUT FOOTWAYS	DESIGN
PRIME COST	£6894	£18,691	PRIME COST
ANNUAL CHARGES	£9	£1,363	ANNUAL CHARGES
CAPITAL VALUE	£225	£34,075	CAPITAL VALUE
£ 3500			£ 3500

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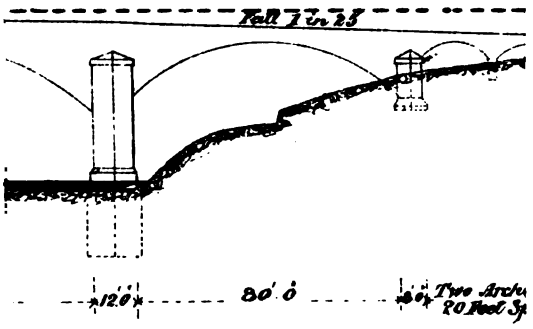
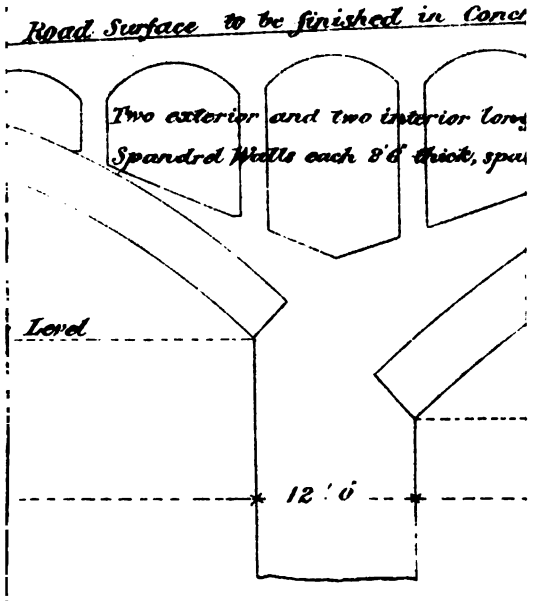


Enlarged Section of Spa
at A. Scale 10 Feet to a



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